



The Affected Environment

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This chapter describes the existing environment that could be affected by actions proposed in this Draft GMP/EIS. The specific topics detailed in this chapter include cultural resources, natural resources, the social and economic environment, visitor experience and park operations. The topics were developed to focus and compare environmental impacts among the alternatives. These topics were selected based on federal law, regulations, executive orders, NPS management policies and concerns expressed by the public or other agencies during scoping and comment periods. The conditions described establish the baseline for the analysis of effects found in the next chapter, Environmental Consequences.

IMPACT TOPICS ELIMINATED FROM FURTHER ANALYSIS

The impact topics eliminated from further evaluation are briefly discussed below and will not be analyzed in detail in this document.

Sacred Sites and Indian Trust Resources

There are no federally recognized Native American tribes in the Commonwealth of Virginia, consequently, no consultations to determine the presence of Sacred Sites have been conducted to date. The Virginia State Historic Preservation Officer has requested that we consult with the Virginia Council On Indians during the public review process. Furthermore, if any unknown significant resources were uncovered during ground-disturbing activity, procedures appropriate to the Native American Graves Protection and Repatriation Act would be instituted.

Public Health Issues

There are no public health issues associated with any of the alternatives.

Hazardous Materials

None of the lands currently owned by the park are known to contain hazardous materials. Lead paint exists in the historic buildings at City Point and the park has had experience removing and encapsulating the material in construction projects over the past five years within portions of these buildings. This topic was therefore eliminated from further consideration with the proviso that the lead paint and other toxic materials would be removed, encapsulated or otherwise addressed according to federal guidelines if (1) the building is used for housing and that employee has a child under the age of seven years of age or (2) if the building is used as a public space and the paint is loose or flaking. However, before any construction occurs, written certification of the absence of hazardous materials would be required.

The presence of hazardous materials will have to be evaluated for each transaction at the time of each acquisition or transfer of property to Petersburg National Battlefield when and if additional lands are acquired.

Climate

None of the alternatives have any potential to affect climate in the Petersburg project area.

Groundwater Quality

None of the alternatives have any potential to affect the quality of groundwater in the Petersburg project area.

Floodplains

None of the alternatives have any potential affect on local flood plain areas.

Rare, Threatened and Endangered Species

The Division of Natural Heritage of the Virginia Department of Conservation and Recreation did not identify any protected species occurring on the Petersburg National Battlefield during the surveys they conducted in the period 1990 through 1991. Granitic Flatrock, a unique (but not legally protected) vegetation community has recently been identified at Five Forks in an area of natural open space. Currently new surveys are underway to create an ecological inventory database for Petersburg. Lands proposed for addition to the Petersburg boundary are not included in the current ecological surveys. Specific impacts to rare, threatened or endangered species are unknown. Results from the proposed ecological inventory surveys would have to be considered in evaluating specific development actions on new or existing lands.

IMPACT TOPICS FOR ANALYSIS

CULTURAL RESOURCES

The National Park Service is steward to many of America's most important natural and cultural resources and is charged with their preservation-unimpaired for the enjoyment of present and future generations. Petersburg National Battlefield, like many other units in the park system, has cultural resources-the material evidence of past human activities. These resources are finite and nonrenewable and begin to deteriorate almost from the moment of their creation. Conforming to the spirit of the NPS Organic Act of 1916 and various historic preservation laws, park management activities must reflect awareness of the irreplaceable nature of these material resources. Therefore, park cultural resource management involves research, evaluation, documentation, registration of park resources, and setting priorities that ensure these resources are preserved, protected, and interpreted to the public.

Formal Designations of the Park's Resources

Petersburg NB is listed on the National Register of Historic Places. The Register is the nation's official list of cultural resources worthy of preservation and is part of a program to coordinate and support public and private efforts to identify, evaluate and protect our historic and archeological resources. It was included among the cultural NPS parks with no formal National Register documentation placed in the Register through the National Historic Preservation Act of 1966. The historic context for battlefield, earthworks, and other individual property types within Petersburg NB was established in a National Register Multiple Property Listing in February 2000.

The historic context for Civil War Era national cemeteries, including Poplar Grove National Cemetery, was established in October 1994. Portions of the park have been documented and are registered as individual properties, or as part of a district. Appomattox Manor is a National Register property. Grant's Headquarters at City Point is part of the City Point Historic District. The Five Forks Battlefield is a National Historic Landmark.

Historic and Designed Landscapes

A cultural landscape is a reflection of human adaptation and use of natural resources. It is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and types of structures that are built. The character of a cultural landscape is defined by physical materials such as roads, buildings, walls, and vegetation and by use reflecting cultural values and traditions. Shaped through time by historical land use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes. They are a good source of information about specific times and places, but at the same time, their long-term preservation is a challenge.

Four distinct cultural landscapes are found as part of the Petersburg Campaign: the Civil War battlefields; the plantation setting of Appomattox Manor and Grant's Headquarters at City Point; Poplar Grove National Cemetery; and historic Old Town

Petersburg. The principal cultural landscapes at the park are the core areas of the Petersburg Campaign battlefields. These core areas contain cultural resources such as earthworks, archeological sites and farm buildings. Topography, watercourses, and other physiographic features helped to define tactical and strategic military positions. In general, remnants of open fields and forested areas, farmsteads, and earthen fortifications can be most easily found within park boundaries and lands proposed for boundary expansion.

On the eve of the Civil War, Petersburg was a bustling economic and trading center for south Virginia and beyond. Located on the Appomattox River and a hub of railroad activity, it was well suited for the trade carried on there. The outlying area surrounding Petersburg was farmland where a variety of crops were raised. The landscape was one of largely flat open fields and forested lands occasionally pierced by creek ravines. Several railroads and major roads crossed the fields. Antebellum plantation dwellings, slave quarters, agricultural buildings, and smaller farmsteads could be found there and along the major thoroughfares that funneled people and goods into Petersburg. Further to the east, the village of City Point was a port for the area. It was in large part, these important transportation links—the rivers, railroads and roads—that brought the Civil War to the city's doorstep in the late spring of 1864.

Appomattox Manor and other historic buildings, which include the restored cabin occupied by General Ulysses S. Grant during the Petersburg Campaign, provide a glimpse of plantation life during and after the Civil War. The grounds and gardens around the historic structures were largely developed

during the early 20th century. Cast-iron and stone entrance gates and a fence were installed along Pecan Avenue and Cedar Lane in 1916. Landscape remnants include the drives and paths around each of the houses, major ornamental plantings, a large open lawn and partially restored ornamental gardens.

Poplar Grove National Cemetery is a designed landscape, with a unified layout and structural features. It is managed as a modern cemetery with headstones considered modern commemorative resources. The elements of the historic landscape include: a carriage lane built from the Vaughan Road entrance to the flagpole; associated structures including the lodge, stable and utility building; a bandstand; monument and section markers; and the wall surrounding the cemetery grounds.

As the historic urban center for the region during the Civil War, sections of Old Town Petersburg comprised of three contiguous National Register Districts: Old Town Historic District, Centre Hill Historic District, and Courthouse Historic District will be designated as the park's new "Home Front" unit. This area-bound by the Appomattox River to the north, Washington Street to the south, 5th Street to the east and Canal Street to the west-contains much of Petersburg's mid-19th century business and residential area. Located within the District are some of the major Civil War related historic resources including numerous buildings, roads, bridges and the Appomattox River.

Historic Structures

Buildings

Appomattox Manor in City Point is sited prominently on the high bluff over the rivers,

and was built by the Eppes family, leaders in the community for more than 300 years.

The manor house served as the center of a large family plantation, with fields in what is now Hopewell, across the Appomattox River and on a James River island. During the Civil War, federal forces occupied the Appomattox Manor grounds. Most of the manor house remained empty, although some downstairs rooms were used as offices. The oldest part of the house was built in 1763, and as the fortunes of the family improved, wings were added in 1840-41, 1854 and 1916. In the early 1980s, the NPS stabilized the manor house, restored the roof to its early 20th century appearance, and adapted the interior for use as offices and exhibit space.

Outbuildings to the west of the house include a kitchen/laundry house (c. 1836), a dairy (c. 1836), two smokehouses (c. 1825 and c. 1836), and a garage (c. 1917 over a 19th-century ice pit). Visitors are not permitted in these dependencies on a regular basis. The manor's garage and gazebo are close to the Appomattox slope, and are being undermined due to erosion at the top of the slope.

Grant's Cabin stands 100 yards east of the main house. During the summer of 1864, the troops and their commanders lived in tents on the front yard of Appomattox Manor. When it became clear that the campaign would last into the winter, cabins replaced tents. Those of Grant's staff were located east of the manor house on the flat area, in a line facing the river. At the center of the line, a two-room log cabin was built in November of 1864 for General Ulysses S. Grant's office and bedroom. After the war, the cabin was dismantled and displayed in Philadelphia. The NPS rebuilt it at Appomattox Manor in 1983, slightly off its original location. The cabin was restored at that time, using as

much of the original fabric as was available. Due to poor maintenance while in Philadelphia, little of the cabin's original exterior survives. The cabin is in good condition.

Along Pecan Avenue east of the main gate to Appomattox Manor stands Bonaccord, a two and one half-story brick house. Built in the Greek Revival style between 1842 and 1845, Bonaccord was originally the rectory for St. John's Episcopal Church. Purchased in 1903 by the Eppes family, the house was modified in 1916 and used as a family residence and rental property until the NPS acquired it in 1986. The property also contains an early 20th-century prefabricated garage.

Bonaccord is significant because it existed at the time of the Civil War and was one of the Eppes family homes. It is a contributing element in the historic district. NPS currently uses the building on a limited basis for storage. A preliminary architectural assessment of the structure indicates a high degree of integrity on both the interior and exterior. The building was last renovated in the 1950s and there is lead-based paint on the interior surfaces; heating, plumbing and electrical systems are obsolete and require replacement.

The historic buildings in the Western Front are located in Poplar Grove National Cemetery. They include the lodge (1868), stable and utility building (1929), built to assist visitors and facilitate cemetery maintenance. The lodge is currently used for occasional park operations, and the stable and utility building is used to store maintenance equipment. The buildings are in good condition.

Vernacular Buildings

For this GMP, the term vernacular building—an architectural style—is used to designate the buildings in Five Forks. The unit's building inventory is not complete, and their significance has not been determined.

The vernacular buildings at Five Forks include two mid-20th century barns, a mid-20th century former gas station that serves as the visitor contact station, and numerous structures on four post-Civil War tenant farms. The visitor contact station is a visual intrusion on the battlefield. It is in the middle of the site's key interpretive vista, obscuring the primary military objective for the Union army and the strongest defensive position for the Confederates. The four tenant farms were established after the Civil War on the Gilliam plantation. Descendants of one of the tenant families remain on the farm under a life tenancy agreement.

Earthworks

During the war, the landscape surrounding Petersburg was dramatically altered by the construction of defensive structures called earthworks. These earthworks were engineering marvels, many containing elements not duplicated elsewhere and were the precursor to trench warfare employed in World War I. Many different types of earthworks were built at Petersburg including: battery, breastwork, fort, redan, redoubt and salient. The earthworks are the largest historic resource in the park totaling more than 20 miles. Many of these earthen features are on the List of Classified Structures.

The Dimmock Line, an extensive Confederate defense line, was built to defend the ridge overlooking Petersburg.

It protected the main rail lines and yards in Petersburg, and the railroad bridge crossing the Appomattox to supply Richmond. The Dimmock Line contained 55 batteries along a ten-mile line resting on the southern bank of the Appomattox River, protecting the city on three sides.

The Federal siege line was anchored on the Appomattox River at Battery V (north of the visitor center) and expanded westward for 10 miles. The line incorporated portions of the Dimmock Line and other former Confederate positions that had been overrun. Most of the line's Union earthworks and associated encampments, depots and other sites lie outside the park.

World War I-era earthworks are located in the area between Battery 7 and Fort Friend east of the tour road and were used by the US Army during World War I (1917-1918) as a training center for soldiers. A series of earthworks, which include trenches, a powder magazine and revetments, survive today. These are among the few surviving examples of WWI earthworks and they lie within sight of Civil War earthworks.

Fort Sites

The Union earthworks were built as post-battle positions after the battles of Weldon Railroad and Peebles' Farm. The park contains minimal battlefield lands for these two battles, and the earthworks are important interpretive resources. The fort sites are generally small and widely separated from one another. The areas surrounding the sites are less suburbanized as one moves west, but development is quickly encroaching. Access is generally limited due to remote locations and limited facilities. There are few waysides, and only informal foot trails lead to the interiors of these sites.

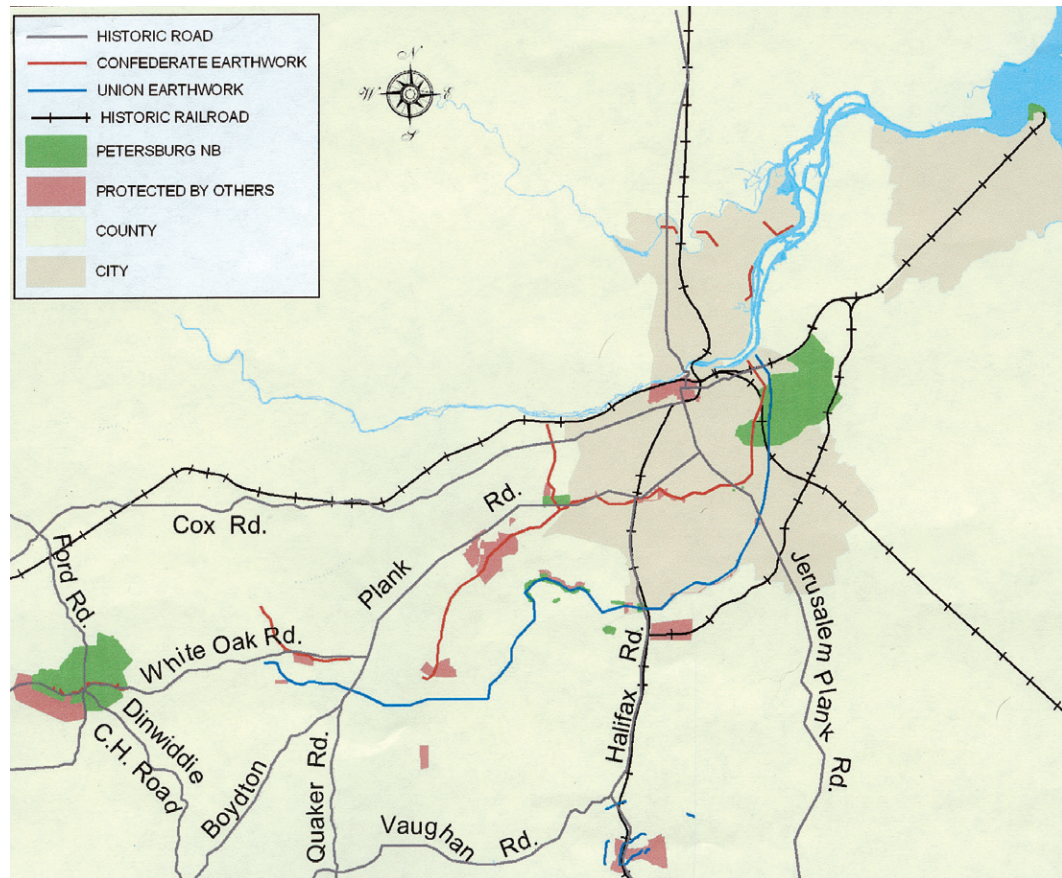
Relatively few earthworks were constructed for the Battle of Five Forks because the land was occupied for only a short time.

Confederate defenders hastily built earthworks on a line parallel to White Oak Road, the anticipated Union line of attack. Three sections of this fortified line survive: the "angle" north of the road, a small segment north of the road, and another south of the road. The Confederate forward outpost, part of the defensive works employed in the final action of the Five Forks battle, also survives.

Railroads

The landscape contains a few remaining signs of the US Military Railroad, a Civil War line established to ensure that Union troops were well supplied during the Petersburg Campaign. When the Army of the Potomac established its headquarters at City Point, it co-opted the damaged rail lines of the Petersburg and City Point Railroad and reconstructed the line as the US Military Railroad. The army built an engine house and yard at the base of the bluff, bringing cars and engines to City Point via barge. The rail line ran from the depot to Battery IV behind the visitor center at a point three miles east of Petersburg, where it extended southwest of the city for 21 miles. The line grew as the Union army consolidated its military victories: after each gain, the army reinforced temporary earthworks and built new railroad lines to support the next assault.

By June of 1865, the tracks had been removed where a pre-war railroad had not existed. Most of the evidence of the railroad has vanished from City Point. Only one of the original half-dozen spur tracks into the depot survives, and a cut through the bluff to the south of the historic district remains. The two existing railroad lines in the Eastern



Transportation corridors during the Petersburg Campaign.

Front follow the basic alignment of the Civil War rail lines that were the objectives of several offensives. One line, the Norfolk & Petersburg Railroad, is on the western boundary of the Eastern Front and cuts through the unit on the southeast and linked the port of Norfolk with Petersburg. The Petersburg and City Point Railroad, an eastern extension of the South Side Railroad at the time of the war, is located on the northern border of the Eastern Front in the area of the visitor center. Both lines are now part of the CSX system. The lines are

important in interpreting the offensives. Petersburg & Weldon Rail Line (now State Route 604 (Halifax Road) played an important role in connecting Petersburg to the rest of the South and in providing supplies for Lee's forces. The line ran from Petersburg south to Weldon, North Carolina, where it connected with another line to the Port of Wilmington. The Atlantic Coast Line Railroad, now part of CSX, was the connection through the City of Petersburg in 1867. After the war, the Petersburg & Weldon line was consolidated into this rail line.

Roads and Road Traces

An important military objective of both the Initial Assault and Crater battles was control of the strategic roads east of the city. Traces of four roads have been integrated into the Eastern Front's trail system.

- Baxter Road Trace linking Petersburg and Norfolk. This was a supply route used by both sides. Union forces advanced along the upper portions during the Initial Assault. Part of the trace is included in the park's trail system, while another portion has been eroded and is reverting to forest.
- Jordan Point Road Trace connecting Petersburg with Jordan Point on the James River, was used by Federal troops as a major transportation corridor during the Petersburg campaign.
- Prince George Court House Road Trace, connecting Petersburg with the Prince George County Court House. In 1864 it served as the avenue of advance for Federal troops during the Initial Assault, and was a primary connection between the Union front lines and Meade's Station, a major depot and hospital site. The historic trace is evident in sections, beyond Fort Stedman and the eastern park boundary.
- Shand House Road provided access from the Shand House to Baxter Road and Prince George Court House Road. Both Confederate and Federal armies used it for troop and supply movements.

Two through-roads (White Oak and Courthouse) and a road that terminates at the crossing (Wheelers' Pond) create the 'five forks' that give the junction its name. All were Civil War roads that have been subsumed into the state highway system as two-lane paved routes. All have been re-

engineered; they have higher crowns, deeper side ditches, and are wider and more level than they were at the time of the Civil War. However, their basic alignment has changed little since the Civil War. The road names and route numbers are Dinwiddie Court House Road (VA Route 627), White Oak Road (VA Route 613) and Wheelers Pond Road (VA Route 645). White Oak Road is a major collector road for the county.

A number of Civil War-era farm lanes or paths are still visible, although due to limited use or neglect they are in poor condition. They include a wagon road connecting Court House Road and White Oak Road and a road used for the Confederate escape at the west end of the park unit.

Archeological Resources

Archeological resources are the physical remains of the earthworks, battlefields, and farming complexes that contain the undocumented history of wartime Petersburg whose study would allow greater understanding of a wider range of its inhabitants, military or civilian, slave or free, throughout the conflict. Sites possessing high integrity, especially those containing information applicable to broad historical and anthropological questions, are nationally significant.

The pre-European archeological resources of the City Point Unit are potentially nationally significant and potentially eligible for consideration as a national historic landmark. Archeological data that support this conclusion was compiled during three separate survey and excavation projects. A 1981 systematic survey of the current parking lot at the western end of the park revealed the presence of prehistoric features. Investigators determined that the slight rises on the property were likely to yield additional archeological resources if

surveyed in an appropriate manner. A 1982-83 limited testing program in the vicinity of Grant's cabin and the 1983 systematic survey of the grounds around Appomattox Manor confirmed the likelihood of the 1981 hypothesis. During these investigations, archeologists discovered prehistoric materials in intact contexts, usually at the higher elevations; and materials associated with historic construction and occupation in



Ruins of Taylor House Kitchen.

disturbed contexts. Due to the small size of test areas, no definitive identifications were made of prehistoric features. Still, the volume of 21 lithic remains led investigators to conclude that the City Point Unit was occupied extensively, if not continuously, over the past 10,000 years.

Evidence of the rich potential of City Point as a major pre-European site has also been revealed in artifacts uncovered as erosion has occurred on the Appomattox River slope. The erosion has been caused by the undermining of the slope at its base, along the shoreline. Continued erosion will threaten these important archeological resources. Historic archeological resources include domestic and Civil War-related sites. Evidence of a dwelling built much earlier than Appomattox Manor survives some 20 feet north of the present house.

Archeological investigations focusing on the Civil War period were designed to find the original site of Grant's cabin. The rebuilt cabin was located offset from the original site to avoid disturbing subsurface remains. Other Civil War-era artifacts have been found throughout the property, with a large concentration located in a trash midden south of the house. Resources related to the Union Army's port facilities might be



Eppes Plantation dairy and Smoke House, City Point.

located underwater or alongside the riverbank. Artifacts recovered from site excavations have been catalogued and are now stored in the manor.

Very little archeological testing has been done at the Eastern Front beyond investigations at the Crater. The investigations between 1937 and 1962 focused on locating the mine entrance. A later study in 1981 on the Confederate picket line shed light on the general conditions of soldiers' lives in the trenches. The earthen fortifications at Petersburg NB were developed, maintained and lived in by almost 200,000 soldiers for almost a year. The 1981 study found that soldiers built coal fires for warmth, and melted spent lead into unusual shapes to while away the time. The only prehistoric site to have been discovered, from the Late Archaic Halifax period, was found in

association with a small assemblage of stone tools from the Taylor house site at the Initial Assault Battlefield.

Four historic below-ground sites have been identified: the Taylor House, the Hare House, the Friend House and Jordan House. They were the locations of 18th and 19th century farmhouses overrun during the Civil War and occupied by Confederate or Union armies; all were destroyed by the armies or by Union fort-builders scavenging for materials. Limited archeological investigations have been conducted on two sites. There is documentary evidence for other late-18th and early 19th-century domestic sites. Detailed archeological and documentary research would be required to prepare an inventory of the resources associated with these sites.

Formal archeological investigations have not been conducted at the many battlefields at the Western Front. Some Civil War-era artifacts have been found, and it is anticipated that excavations would reveal artifacts within the interior of the forts.

At Five Forks, an archeological survey of the unit in 1989 concluded that small Archaic Period camps and extraction sites are likely to be found. Evidence of Paleo-Indian occupation is also likely, as a site from that period has been found in the surrounding area. The tenant farms and evidence of earlier homesteads indicate the presence of archeological resources that could document agricultural operations from the 18th century to the recent past.

Ethnographic Resources

The Eppes family was a powerful force in the community in the 18th and 19th centuries. Dr. Richard Eppes was a leader in local discussions on secession, and a major player in the politics and economy of the region after the war. Over the past five years, park staff have compiled and studied the Eppes family plantation records, which are among the most complete of similar family records held in the NPS system. They have charted the genealogy of the family, and have gained detailed knowledge about the conditions of pre-war plantation life.

The decade of the 1860s is of particular interest in this research effort because of Dr. Richard Eppes, the plantation owner at that time. Born and raised at City Point, he was in many ways like other James River plantation owners; however, Eppes married a society woman from Philadelphia. The family records have the potential to illustrate how the conflicting values and opinions that led up to the Civil War are expressed in a single family. The records could be used to trace former Eppes slaves after the Emancipation and Civil War, providing information to illustrate the impact of the war on slaves and freedmen in the South.

No formal ethnography has been done in conjunction with the other units. Information on the Gilliam family plantation associated with Five Forks is contained in the University of Virginia library, and informal oral histories of family members have been recorded. Post Civil War tenant farming has not been well documented. Many Civil War-era families are still represented in the area and have indicated an interest in further documentation. Ethnographic study is expected to yield new information about the impacts of the battle and the war on local people.

Monuments and Commemorative Resources

The Eastern Front contains the majority of Petersburg NB monuments. The existing monuments memorialize war dead and the events of the siege and battles. They contribute directly to the park's mission. One of the legislative purposes of the park is to commemorate the campaign, siege and defense of Petersburg and to be a permanent memorial to restored peace between the e



Jordan Family cemetery near Confederate Battery V.

states. Most monuments were erected by Civil War veterans, but others have been added in the mid- and late 20th century.

The Eastern Front also contains a cemetery, a family burial ground in a wooded area near the Jordan house site. Marble stones mark

the graves of Josiah Jordan, the Civil War-era owner of the property, and members of his family. It is located east of the visitor center parking area.

The Western Front has two monuments—the Gowen and Pennsylvania Monuments—that commemorate one of the battles of the Final Assault, the Federal IX Corps Assault. The assault was against Rives' Salient and Fort Mahone on the Confederate Line. The monuments occupy tiny sites that are not much larger than their bases in a south Petersburg business district, surrounded by city streets and commercial land uses.

Poplar Grove National Cemetery, in Dinwiddie County south of Petersburg, was established in 1866 as part of the national cemetery system for veterans of American wars. It occupies the encampment site of the 50th New York Volunteer Engineers Regiment and the Poplar Grove log church built during the Petersburg Campaign. Buried here are 6,181 soldiers who died in the Petersburg and Appomattox campaigns. The soldiers' remains were recovered between 1866 and 1869 from battlefields throughout central and southern Virginia.

The headstones originally stood upright, but in 1934 they were laid flat to facilitate mowing. In the intervening years, many of them have been chipped and inscriptions eroded due to the softness of the stones and to water ponding on surfaces. The headstones are considered commemorative resources.

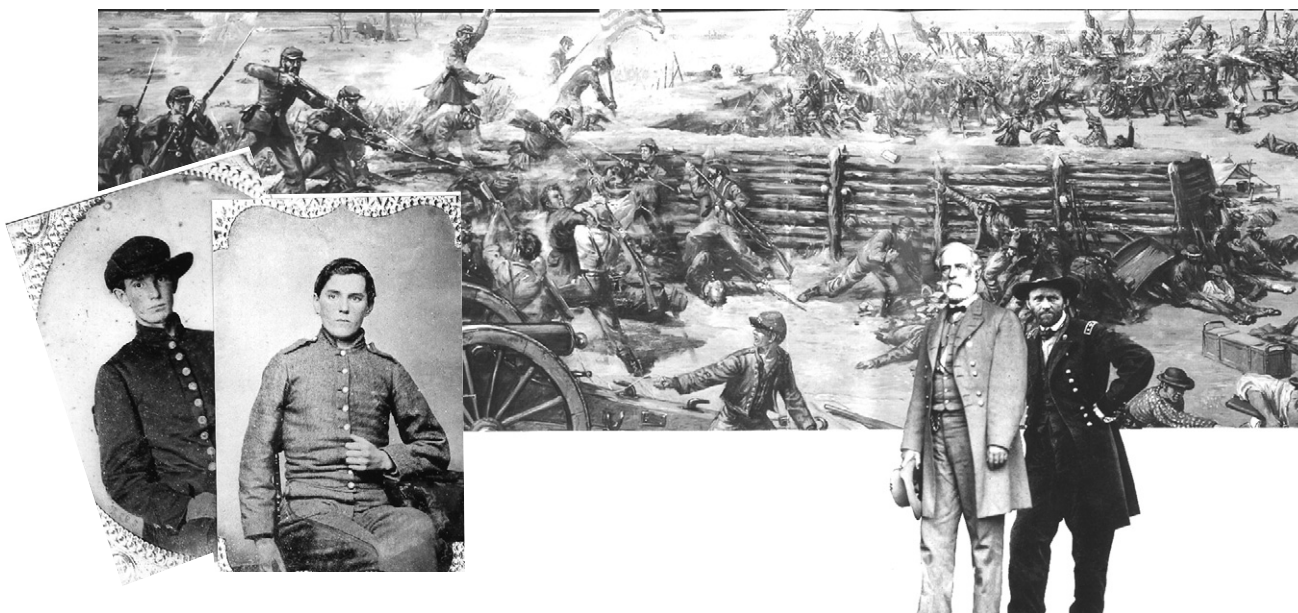
Five Forks has two monuments, both located at the junction. They are the Battle of Five Forks Monument and the Five Forks National Historic Landmark plaque.

Library, Collections and Archives

An extensive library of scholarly works, popular information and primary sources on the Civil War is housed in the basement of the visitor center. The Civil War soldiers' data bank also resides in this facility, as do collections of Petersburg Campaign-related photographs, maps, memorabilia and other printed materials. The library collection is known for its many memoirs, unit histories

A significant collection of cannon tubes, representing many types of cannon used during the Civil War period, is housed near the visitor center. Some tubes have been mounted and are displayed in the park.

A collection of large paintings depicting historic events of the campaign is now archived in park storage areas. The paintings were part of the wayside program and were hung at interpretive stops along the tour



and other primary sources on those who saw action during the Petersburg Campaign. There is also substantial information on other individuals, units and activities related to the Civil War. The collection is used both by Petersburg NB staff for scholarly work and by individuals for genealogical and other research.

The park also houses artifacts and period memorabilia, including uniforms, weapons, insignia and other items, that have been donated to the park or found during archeological excavations in the park.

route. Reproductions have been substituted for the originals.

The visitor center provides minimal acceptable conditions for the storage of the park's collections. However, it does not have space to accommodate future growth. The number of archeological artifacts is expected to increase as comprehensive surveys and project-based investigations are undertaken. In addition, it does not house all of the park's collection as some archives and artifacts are stored at the City Point Unit.

NATURAL RESOURCES

Climate

The Petersburg-region climate is typical of the Mid-Atlantic portion of the East Coast, with warm, humid summers and generally mild winters. The growing season averages approximately 190-200 days. Average winter temperatures range between 27° and 53°F with an average January temperature of 38.4°F. Summer temperatures average between 66° and 87°F with an average July temperature of 77°F. The average annual rainfall is 44.7 inches and the average annual snowfall is 9.6 inches. The year-round average relative humidity is 65 to 70 percent, with summer values frequently exceeding 85 percent.

Air Quality

The National Park Service seeks "to perpetuate the best possible air quality in parks because of its critical importance to visitor enjoyment, human health, scenic vistas, and the preservation of natural systems ... [and] will assume an aggressive role in promoting and pursuing measures to safeguard [air quality related values] from the adverse impacts of air pollution". NPS Natural Resources Management Guidelines include the following management activities with respect to air resource management:

- inventorying air quality related values associated with each park
- monitoring and documenting the condition of air quality and related values
- evaluating air pollution impacts and identifying causes.

These objectives and activities are based on authorities contained in the NPS Organic Act of 1916, the individual acts establishing the parks, the Clean Air Act, and other Federal statutes. The NPS Organic Act provides the fundamental basis for the protection and

preservation of park resources vulnerable to the impacts of air pollution. Moreover, one of the stated purposes for the enactment of the Clean Air Act is to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population". Recognizing the value of pristine air quality in specially designated areas such as national parks and wilderness areas, the Congress amended the Clean Air Act in 1977 by adding a section to protect the air quality in these areas from any further degradation. One of the purposes of the Prevention of Significant Deterioration (PSD) Section of the Clean Air Act is "... to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic or historic value."

To accomplish this goal, Congress established a classification system for areas having air quality better than the national ambient standards. The Clean Air Act provides the highest degree of protection in areas designated as class I, allowing only very slight deterioration of air quality over baseline conditions in these areas. These areas include all national parks greater than 6,000 acres and national wilderness areas greater than 5,000 acres in existence at the time the 1977 amendments were enacted (August 7, 1977).

The federal Clean Air Act, as amended in 1990, requires the United States Environmental Protection Agency (EPA) to identify national ambient air quality standards (NAAQS) to protect public health and welfare. Standards have been set for six pollutants:

- ozone (O₃)
- carbon monoxide (CO)

- nitrogen dioxide (NO₂)
- sulfur dioxide (SO₂)
- particulate matter less than 10 microns (PM₁₀)
- lead

EPA also promulgated a revised NAAQS for O₃ and a new NAAQS for particulate matter less than 2.5 microns (PM_{2.5}). However, in the spring of 1999, a U.S. Court of Appeals panel remanded the standard to EPA for further consideration. These pollutants are called criteria pollutants because the standards satisfy criteria specified in the Clean Air Act. An area where a standard is exceeded more than three times in three years can be considered a non-attainment area. Non-attainment areas are subject to planning and pollution control requirements that are more stringent than in those areas where standards are met. While air quality in an air basin is usually determined by emission sources within the basin, pollutants transported from upward air basins by prevailing winds may also affect air quality.

Prince George and Dinwiddie Counties both achieve ozone attainment status according to the Environmental Protection Agency (EPA) standards. However, the City of Hopewell, because of its inclusion in the Richmond ozone maintenance area, was classified as having moderate non-attainment for ozone in 1991 (based on the 0.12 ppm ozone 1-hour average). The maintenance area status was reached as attainment in 1997 after several years of compliance and reductions in ozone levels.

Noise and Soundscapes

National Park Service Director's Order #47 (DO-47) articulates soundscape preservation and noise management policies that require, "to the fullest extent practicable, the protection, maintenance or restoration of the

natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources."

Natural soundscapes exist in the absence of human-caused sound and are the aggregation of natural sounds that occur in parks, together with the physical capacity for transmitting natural sound. Natural sounds occur within and beyond the range of sounds that humans can perceive, and can be transmitted through air, water or solid materials. Noise is generally defined as an unwanted or undesired sound, often unpleasant in quality, intensity, or repetition.

The preservation or restoration of natural resources, including soundscape, is an important and inherent part of the mission of the National Park Service. Soundscape and natural sound is also an inherent component of the Organic Act which protects "the scenery and the natural and historic objects and the wild life...". Quiet, natural sound, solitude and tranquility are as important to visitors as scenery. The preservation and protection of soundscape is intrinsic to cultural and commemorative areas and settings such as memorial, battlefields, prehistoric ruins and sacred sites.

Poplar Grove National Cemetery is a commemorative area where quiet is a necessary component of the resource. The battlefields of the park are also commemorative in nature and are better experienced without the intrusion of modern sounds.

The primary source of noise at the Eastern Front unit of Petersburg NB is traffic on I-95, the major interstate highway on the east coast, and to a lesser extent, existing roadways, such as Route 36 on the north side

of the unit. Traffic-generated noise is less of an issue at the other park units, such as Grant's Headquarters at City Point which is located at the terminus of a city road in Hopewell. Although four roads intersect Five Forks, traffic volumes are not high on these roads at this time. Noise associated with residential and commercial development affects other park units. For example, an industrial steel fabrication installation near Fort Fisher represents a periodic source of noise that impacts the visitor's experience at that site.



NPS staff inventorying road conditions.

Energy and Green Operations

Actions to promote sustainable development in the design, retrofit, and construction of park facilities have associated energy conservation and air quality benefits. These include actions that reduce or replace consumption of conventional fossil fuels and/or reduce the consumption of other resources either directly or indirectly. For example, the park has several solar-powered audio wayside exhibits. Reductions in potable and non-potable water

consumption also achieve concurrent reductions in energy consumption and associated air emissions. Acquisition of energy efficient appliances whenever possible also is an incremental energy saving measure that has associated air quality benefits.

Alternative fuel vehicles are recognized as a means of reducing park-generated air emissions and petroleum energy consumption. For example, the park has owned and operated several propane dual-fuel pickup trucks since 1992, and also has one electric-powered utility cart. Other opportunities to reduce energy consumption that have been implemented by other park units include the utilization of biodiesel fuel, which is a domestically produced, renewable fuel that can be used in unmodified diesel engines with the current fueling infrastructure. The most widely used biodiesel fuel is B20, which is a blend of 20 percent vegetable oil, fats, or grease and 80 percent diesel fuel. In addition to displacing some conventional diesel fuel, it reduces emissions such as particulate matter, carbon monoxide, hydrocarbons, and air toxics. However, the feasibility of its adoption is highly dependent on its local availability and cost relative to conventional fuel.

The park has also considered an improved transportation system that would both improve visitors' experience of the park and reduce visitor vehicle energy consumption and air emissions. Such a system could be a new shuttle service that would circulate within the Eastern Front and perhaps circulate to some of the other units. The park will pursue further study on the feasibility of alternative transportation system services.

Geology, Soils and Topography

Geologic monitoring can be used to detect long term environmental change, provide insights into the ecological consequences of those changes and to help determine if the observed changes dictate a corrective action in management practices. Geologic indicators can be used to assess whether environmental change is within a normal or anticipated range of variation. Geologic indicators include measurements of change in volcano activity, earth movement, glacier advance and retreat, shoreline movement, sand dune movement or mobilization, sediment storage and loading, soil erosion, thermal feature activity and temperature change, and slope and rock stability, among others.

In the vicinity of Petersburg NB, Interstate 95 delineates the "fall line", a geological transition between the Piedmont and Atlantic Coastal Plain physiographic regions. Portions of Petersburg NB lands in Dinwiddie County lie on the eastern edge of the Piedmont Region; the remainder of the park lies in the Atlantic Coastal Plain region. Lands proposed for boundary expansion are included in either the Piedmont or Atlantic Coastal Plain physiographic regions.

Soil is defined as the unconsolidated portion of the earth's crust modified through physical, chemical, and biotic processes into a medium capable of supporting plant growth. Soil properties influence natural and cultural resources and the physical infrastructure in parks. Soil surveys provide an orderly, on-the-ground, scientific inventory of soil resources. The inventories include maps of the locations and extent of soils, data about physical and chemical properties of those soils, and information derived from those data about potentialities

and problems of use on each kind of soil. The information is in sufficient detail for application by park managers, planners, engineers, and scientists to specific areas of concern. This systematic inventory of soil resources facilitates effective management in each park. The NPS Soil Inventory and Mapping (I&M) Program supports soils mapping and inventories based on standard terminology and techniques of the National Cooperative Soil Survey.

City Point lies at the confluence of the Appomattox and James Rivers. The bluff overlooking the river falls 40-feet to the shoreline. Due to the loose soils and absence of rock outcrops, typical of coastal plains, the bluff has experienced periodic sloughing. The saturation of the soils at the shoreline, stormwater runoff and the undercutting of the bank cause this natural process of erosion by the river currents. Erosion of the bluff deposits sediment into the rivers at City Point. The bluff and shoreline has been stabilized by the installation of a 1,500-foot section of riprap along the shoreline. It has been successful in limiting damage from erosion on this section of the bluff, however, erosion continues on the remainder of the shoreline. Erosion will continue until the natural angle of equilibrium is reached and the bluff stabilizes.

Mainly sedimentary rocks and unconsolidated or partially consolidated sands, clays and gravels underlie the Atlantic Coastal Plain. Igneous, sedimentary and metamorphic rocks underlie the Piedmont. Due to the composition of the Piedmont geology the soils are mainly derived from acid crystalline rocks (gneiss, granite, and schist groups) which develop into loams and clays. The predominant soil type in the Eastern Front is Emporia and Norfolk sandy loam. Soils in

the Five Forks Unit are well-drained sandy loam with a clay loam subsurface. Most of the land is well drained.

Generally, Petersburg NB topography is characterized as gently rolling countryside. The elevation ranges between 40 feet along the flood plain of the Appomattox River to 168 feet above sea level in the Eastern Front and 302 feet at the Five Forks Unit.

Prime and Unique Farmland and Agriculture

The USDA defines and designates both Unique and Prime farmlands, which are two separate classifications of highly productive soils. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Prime farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods.

Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or yields of specific crops. Petersburg NB contains no Unique farmlands.

Most of the soils types underlying the Petersburg NB are considered to have agricultural value, however, the USDA does not designate prime farmland in federally held property such as Petersburg NB.

In Prince George County and Dinwiddie County, USDA has designated prime agricultural lands. Dinwiddie County in

particular has a large percentage of prime agricultural soils and is an agriculturally based county. Approximately, 26 percent (89,260 acres) of Dinwiddie County was still in agricultural production in 1997. Prince George County defines approximately 37% of the county as prime agricultural soils.

The National Park Service maintains an agricultural leasing program through its Historic Property Leasing Program. Currently in lease are approximately 97 acres of grass fields at Five Forks and 29 acres of grass fields at Confederate Fort Gregg both for cutting hay. Available but not currently in lease are 18 acres of grass field around Fort Morton and 18 acres around the Crater in the Eastern Front. Portions of acquired lands could be placed under agricultural leasing in the future.

The distribution of Prime Agricultural lands in the parcels proposed for inclusion in the park boundaries is summarized in Table 1.

Water Resources and Quality

Surface Waters

Petersburg NB is located within two drainage basins; the Chesapeake Bay (Prince George County lands) and Nottoway River (Dinwiddie County lands). The confluence of the Appomattox and James Rivers occurs near City Point. The James River ultimately drains into the Chesapeake Bay and because of its connection to the Bay, Prince George County, the Cities of Hopewell and Petersburg are included in the Virginia Coastal Zone. The Virginia Coastal Resources Management Program was established by executive order in 1986 to protect and manage Virginia's Coastal Zone. Some of the areas of particular concern to the Virginia Coastal Resources Management

Program are wetlands, erosion, floodplains, significant wildlife habitat areas, waterfront development areas and significant public recreation areas.

Five streams drain the Eastern Front and are within the Chesapeake Bay drainage basin. Poor and Harrison Creeks are the largest. Taylor's Creek is a small tributary of Poor Creek, and the other two streams, one named Branch Creek and the other unnamed, are tributaries of Harrison Creek. Poor Creek flows through the park east of the Crater. Harrison Creek enters the park near the park headquarters and exits at the northern boundary. Branch Creek, a tributary to Harrison Creek, originates from storm drains in the Fort Lee Military Reservation.

The northern portion, approximately 16 percent, of Dinwiddie County lies primarily within the Appomattox River drainage basin; the southern portion, approximately 83 percent, drains into the Nottoway River drainage basin. The Appomattox River drains into the James River; the Nottoway River drains into the Chowan River, ultimately reaching the Atlantic Ocean.

In Dinwiddie County, Rohoic Creek, Hatcher's Run, and Chamberlain's Bed Creek drain park sites in the Western Front and Five Forks. Rohoic Creek, a tributary of the Appomattox River is a well-defined channel with three-foot stream banks. In high water seasons, surface water can appear in the trenches in the adjacent forts, but it quickly drains into the creek. Hatcher's Run and Chamberlain's Bed Creek are part of the Nottoway River watershed. Beaver activity at Hatcher's Run has created a wetland area along the stream. Rohoic

Creek, Hatcher's Run and Chamberlain's Bed Creek have not experienced development upstream.

Biological macroinvertebrate assessment is conducted quarterly on the three creeks within the Eastern Front (Branch, Harrison and Poor). Most species found are either "pollution sensitive" or "somewhat tolerant" species including Caddisflies, Mayflies, Stoneflies, and Dragonflies. The occurrence and abundance of these species in all three Eastern Front creeks indicate fair to good water quality.

Chemical water analyses are conducted as needed on Harrison and Poor Creeks, within the Eastern Front, and Hatcher's Run in the Five Forks Unit. The analyses include the testing of pH, conductivity, temperature, dissolved oxygen and fecal coliform. With the exception of an occasional high level of fecal coliform as a result of overflows of the City of Petersburg sewage pump stations on Harrison and Poor Creeks, the chemical parameters on all three creeks generally indicate good water quality.

Potentially serious threats to water resources include degradation of aquatic ecosystems and stream channelization. High runoff due to upstream manipulation of the Poor Creek watershed has altered the natural configuration of the streambed. The lower part of Poor Creek has had extensive lateral and vertical channel erosion. It now runs through a steep-walled gully 15 feet deep and 30 feet wide. Similar, but less severe, channel erosion has occurred in Harrison Creek. While the Poor Creek channel has been scoured of most major sediment deposits, Harrison Creek has extensive sediment deposits and appears to be much more stable than Poor Creek.

Groundwater

Groundwater is the primary source of water supplied through either the Appomattox River Water Authority (ARWA), Virginia American Water Company (City of Hopewell) or through private individual wells. The Appomattox River Water Authority and the Virginia American Water Company both own and operate water treatment facilities. ARWA provides drinking water to the City of Petersburg and regionally to Dinwiddie and Prince George Counties. Rural residents and industries in the Counties of Prince George and Dinwiddie may also obtain potable water from groundwater wells. Generally water found at shallow depths is of good chemical quality; water from wells that penetrate the bedrock may be hard, corrosive, and have a high iron content.

Floodplains

The 100-year floodplain is the area that is inundated by a 100-year flood, or the annual peak flow that has a 1% chance of being equaled or exceeded in any given year. Flood hazard zone maps for Petersburg NB components show only a portion of City Point lies in Zone A - the 100 year flood plain. At City Point the lower portions of the slopes along both the Appomattox and James rivers are within 100-year flood areas. Additional lands are in either Zone C or Zone D. Zone C corresponds to areas outside the 100-year flood plain or areas with minimal potential flood hazard based on geography, area, and protective measures such as levees; Zone D are lands where no flood hazard analysis has been conducted. As federally owned lands, the Eastern Front is designated as Zone D in flood hazard mapping. FEMA maps do not map flood areas within park boundaries because

parklands are typically outside development zones.

The 100-year flood plain associated with the Arthur Swamp in the Western Front passes through the earthworks between Fort Conahey and Fort Fisher, and the 100-year flood area associated with Rohoic Creek passes along portions of the eastern boundary of the Confederate Fort Gregg site. Second Swamp 100-year flood plain passes through the Globe Tavern lands. A portion of the Globe Tavern proposed land acquisition encompasses a drainage system for Second Swamp and is within 100-year flood plain for Second Swamp.

Five Forks flood plains are associated with the Appomattox River along Dinwiddie County's northern border and Hatcher's Run. Portions of lands proposed for acquisition at Five Forks and Hatcher's Run are within the 100-year flood plain for Hatcher's Run.

Wetlands

Wetlands are transitional areas between land and water bodies, where water periodically floods the land or saturates the soil. The term wetlands includes wet environments such as marshes, swamps, and bogs. They may be covered in shallow water most of the year, or be wet only seasonally. Plants and animals found in wetlands are uniquely adapted to these wet conditions. Wetlands can be found in virtually every county of every state in the nation, from arctic tundra wetlands in Alaska, to peat bogs in the Appalachians, to riparian wetlands in the arid West.

In the past, wetlands were often regarded as wastelands-sources of mosquitoes, flies and

TABLE 1**APPROXIMATION OF FOREST AND UNIQUE/CRITICAL ENVIRONMENTAL AREAS ON PROPOSED BOUNDARY EXPANSION LANDS**

Unit/Battlefield	Acres	Prime Ag. Soils	Floodplains	Wetlands	Forest
Grant's HQ at City Point	3	0	James River	0	0
Eastern Front					
Petersburg Assault	95	35%*		1%	0
Crater	15	5%		5%	80%
Fort Stedman/ Picket Line Attack	879	85%		10%	25%
Western Front					
Globe Tavern	611	85%	Second Swamp	30%	20%
Peebles Farm	88	75%		5%	40%
Petersburg Breakthrough	33	60%		1%	40%
Boydton Plank Road	99	10%	Hatcher's Run	5%	20%
Hatcher's Run	1710	85%		10%	35%
Ream's Station	506	95%		5%	40%
White Oak Road	1925	45%		20%	60%
Jerusalem Plank Road	222	80%		1%	10%
Five Forks	1047	70%	Hatcher's Run	5%	45%

unpleasant odors. Most people felt that wetlands were places to be avoided, or better yet, eliminated. It was accepted practice to drain or fill wetlands for other uses, or to use them as dumping grounds. As a result, more than half of America's original wetlands have vanished.

Today, wetlands are known to serve a variety of important functions. They provide critical habitats for fish and wildlife, purify polluted waters, and check the destructive power of floods and storms. Wetlands also provide recreational opportunities such as fishing, hunting, photography, and wildlife observation they are fast becoming recognized as productive and valuable public resources.

The Petersburg NB's wetland inventory was derived from the wetlands map database at the US Fish and Wildlife Service web-site and applied to United States Geological Survey quadrangle maps. The boundaries, conditions

and classifications of the wetlands provide baseline data and general information on the wetlands on existing Petersburg NB lands. Wetlands on the lands proposed for acquisition under the boundary expansion alternatives are also identified through the same process and mapping. When wetlands are identified on parcels scheduled for construction activity and/or rehabilitation, delineations, assessment, permits and mitigation of wetlands may be required.

The National Wetlands Inventory (NWI) maps indicate that there are no wetlands in Grant's Headquarters at City Point.

For most of its passage through the Eastern Front, the Harrison Creek Corridor is never wider than 50' across, with relatively steep sides and a creek bed with an average width of five feet. At the southern edge of the Eastern Front, the creek broadens into a short section of open water. On the NWI

maps, the Harrison Creek corridor is designated a persistent palustrine emergent wetland subject to seasonal flooding.

The existing elevation of the Poor Creek streambed is substantially lower than it was in the 1860s. At the time of the Civil War, the portion of the Poor Creek corridor was a shallow wetland caused by the partial removal of an earthen dam near Gracie's Salient. On the NWI maps, Poor Creek is designated as a persistent palustrine forested (deciduous) wetland subject to temporary flooding. The stream corridor, which averages 15 feet across, has almost vertical stream banks due to active cutting from storm surges that have increased in volume; speed and frequency as upstream areas have been paved. Channel incision appears to have eliminated most of the palustrine wetland habitat that may have bordered the channel in the past. The flow of water in the main stream fluctuates seasonally, with a 50 percent reduction in volume occurring in the summer due to redirection upstream outside the park.

Taylor Creek, which joins Poor Creek below Gracie's Salient, is identified as an intermittent stream. It dries up in the summer months, carrying water only periodically during the other seasons. Neither the riparian corridor, which averages 25 feet wide, nor the stream channel, which averages three feet wide, is identified as a wetland on the wetland inventory maps.

In the Western Front, the branch of Arthur Swamp is quite small, no more than 25 feet wide as it passes through the park. A drainage culvert channels it under the road. Rohoic Creek is much wider, except at the northeast corner where a narrow channel carries it under I-85. Neither

location is designated a wetland on the NWI maps. A series of palustrine wetlands are associated with Hatcher's Run and its smaller tributaries in Five Forks. The wetlands extend along the western and northern boundaries of the unit and smaller branches reach into Five Forks. Most of the NWI designations for Five Forks identify the wetlands as persistent palustrine wetlands that are either forested or shrub/scrub. Several have been created by beaver (*Castor canadensis*) activity in the area. A portion of the proposed northern boundary expansion at Five Forks incorporates additional wetlands associated with Hatcher's Run.

Chesapeake Bay Preservation Act

Adopted by the Commonwealth of Virginia in 1988 to improve the water quality of the Chesapeake Bay, the Act requires each local government to designate preservation areas. Preservation areas are locations where if improper development were to occur the result could negatively impact the water quality of the Chesapeake Bay and its tributaries. The cities of Hopewell and Petersburg as well as Prince George County are considered Tidewater communities and therefore subject to the requirements of the Chesapeake Bay Act. Dinwiddie County is not included in the Tidewater area as are the other jurisdictions and is not under the requirements of the Chesapeake Bay preservation regulations. The Cities of Hopewell and Petersburg and Prince George County have designated preservation areas consistent with Phase I of the requirements; all three have completed comprehensive plans that address the protection of water quality in compliance with Phase II.

Wild and Scenic Rivers

There are no designated National Wild and Scenic Rivers in the Commonwealth of Virginia. However, Virginia enacted the Virginia Scenic Rivers System Law in 1970. The legislation emphasizes the scenic, recreational, historical and aesthetic values of rivers or sections of rivers. Under the legislation, a segment of the Appomattox River from below the Lake Chesdin Dam to the Rte. 36 bridge in the City of Petersburg was designated a State Scenic River. A regional trail is proposed along the Appomattox River that would link natural, cultural, heritage and other open spaces between Lake Chesdin and the confluence of the Appomattox River with the James River at City Point. The Petersburg waterfront contained within the Home Front Unit would be a critical component of the 22-mile trail.

The Crater Planning District currently recommends an evaluation of the James River between Hopewell and the Surry County/Prince George County line for consideration as a Virginia Scenic River. The area of James River under consideration is adjacent to the City Point Unit.

ECOLOGICAL RESOURCES

Under the guidance of the NPS Natural Resource and Monitoring Program, the park has begun a major undertaking to develop baseline data for fish, reptiles and amphibians, birds, mammals and vascular plants. The inventory and monitoring of natural resources will be integrated into park planning, maintenance and operation, visitor protection and interpretation. The following sections discuss the ecological resources based on past inventories, studies and descriptions followed by an outline of the current and proposed inventories of existing

lands owned by Petersburg NB. Lands proposed for acquisition will be surveyed prior to any disturbance or construction activities after acquisition is complete.

Vegetation

Based on past information, maps and data, Petersburg National Battlefield consists of a variety of habitat types including: upland coastal plain and piedmont forest, old field, managed field, marsh and riverine vegetation. With the exception of City Point, the park's units are more wooded than they were in 1865 and in 1932 when the park was established. Trees covered less than half of the park in 1865; almost ninety percent of the land is now forested. Information on vegetation is contained in the 1995 Forest Management Plan for Five Forks and the Eastern Front, which describes forest health, composition, distribution and hazard fuel loading. The data on forested conditions in 1865 is from the Historic Maps (Michler Maps) of the Petersburg Area in 1865. A botanical inventory of the Eastern Front was conducted in the summer of 1990.

In general, park forests are healthy. Southern pine bark beetle has infested small portions of some of the pine stands, but the damage has been minimal. Forests and open fields have been disturbed periodically throughout the park, providing opportunities for the invasion of nonnative (exotic) plant species such as Tree-of-Heaven (*Ailanthus*) and Japanese honeysuckle (*Lonicera japonica*). Kudzu vine, an extremely invasive plant, has been identified close to the park, but not yet within its boundaries. The Petersburg NB natural resources management program includes a strategic plan to actively manage invasive species.

At times, extreme weather conditions have resulted in damage to the park's earthen structures. High winds and ice throughout the unit have periodically uprooted isolated trees on earthworks or at the edge of the forests. Battery XIII, Forts Fisher and Conahey have been particularly affected. On the sides of large earthen forts where the slopes are steep, uprooting can occur more easily and the damage is more extensive because of the way the root mass extends into the earthwork. To address the protection, sustainability, and interpretation of earthworks and determine the best approach for future management, the park initiated an environmental assessment process. The approved document, *Environmental Assessment and Assessment of Effect For the Preservation of Civil War Earthen Fortifications* (August, 2001) contains seven management objectives to provide for a holistic earthwork preservation and management plan. Through this guidance, all woody vegetation would be removed from Forts Conahey, Fisher, Wheaton, Welch, and Battery 27 - all presently in forest cover; removes trees from Fort Friend and Haskell as well as Colquitt's Salient; removes all trees greater than 12 inches dbh (diameter breast height) from Elliot's Salient; and removes hazard trees only from Fort Urmston and Fort Gregg. In addition, observation platforms (Fort Fisher) and trails (Colquitt's Salient, Fort Haskell, Elliot's Salient, Fort Wheaton, Fort Conahey, and Fort Fisher) would be constructed to enhance interpretation and guide visitor access to and through fortifications. To promote growth of grass cover after tree removal non-native grass seed is used to quickly establish cover and serve as a nursery for harder to establish native grass species; once established native grasses infiltrate the grass habitat.

Grant's Headquarters at City Point consists of approximately 21 acres that include managed park-like grounds and wild growth riverbanks. Eppes Manor House grounds were planted by the Eppes family over the last 300 years. Some specimens date back to the original European imports. In 1983, a tornado ripped through the area destroying some of the trees. Some have been replaced by the NPS. The 1990 botanical inventory found that herbs, vines, and shrubs dominated the flora cover on the banks leading to the river. Dominant taxa included: Japanese Honeysuckle (*Lonicera japonica*), Vicia (*Vicia angustifolia*), and Asiatic Dayflower (*Commelina communis*), Tree-of-Heaven (*Ailanthus altissima*), American Elm (*Ulmus americana*), River Birch (*Betula nigra*), Hackberry shrub (*Celtis occidentalis*), and Paper Mulberry (*Broussonetia papyrifera*). A specimen of Water Hickory is probably an inland limit for this species.

The Eastern Front currently comprises 1443 acres and is dominated by two plant communities: second and third growth, mid-successional stage forests; old field/cut fields. Old field and cut fields surround most of the tour route through the park. Loblolly Pine plantations have been used as forested buffer in some areas along the park boundary. Four "pest species" have been identified: Poison Ivy (*Rhus radicans*), Poison Sumac (*Rhus toxicodendron*), Japanese Honeysuckle (*Lonicera japonica*), and Poison Oak (*Rhus vernix*). Poison Ivy and Japanese honeysuckle dominate the vegetation in some areas.

Areas used for interpretation including roadsides, and walking areas near tour-stops have been planted with grasses and are actively maintained by mowing. Earthworks,

forts and earthen remnants of the Petersburg battle are maintained in tall grass to deter trespass on the fragile structures. Forested areas range from pine to mixed pine and hardwood in composition. The forested areas are 75 years old and dominant species include Tulip Tree (*Liriodendron tulipifera*), Sweet Gum (*Liquidambar styraciflua*), White Oak (*Quercus alba*), Blackgum (*Nyssa sylvatica*) and Loblolly Pine (*Pinus taeda*).

Fifty-nine percent of the Western Front is forested. Dense natural reforestation and undergrowth cover most of the Long Flank, Fishhook and Fort Wheaton sites. Confederate Fort Gregg and Fort Wadsworth are treeless; the earthworks are covered by turf and periodically mowed. The Confederate Fort Gregg fields are maintained under the agricultural leasing program. Poplar Grove National Cemetery is maintained with turf and ornamental plantings. The plantings reflect the pattern of the original design. The uprooting of isolated trees has disturbed some graves.

Approximately ninety-two percent of Five Fork's 1,100 acres is in forest and eight percent is in agricultural fields. A historic vegetation study of Five Forks ascertained that substantial change in the location and configuration of fields and in the composition of the forests had occurred since the Civil War. In 1865, 188 acres were managed as fields, while 100 acres were managed as fields in 1998. There is some overlap in the field configurations, but most of the current fields were forested during the war. The open acreage at Five Forks is generally included in the agricultural leasing program as pasture or for field crops. The botanical inventory found the composition of the woods and fields at Five Forks resembled similar communities of the

Eastern Front. Most of the woods are young second growth pine. Logging roads have been cleared through the wooded areas, and many of the cleared fields are the result of recent timbering. The unit contains a 12-year-old, dense, evenly spaced loblolly pine plantation. A marshy habitat in the northeastern portion of Five Forks, a result of the active beaver population, contains a diversity of wetland plants. Areas along the edge of the marsh consisted of young trees, shrubs, and herbs. Dominant trees include: Sweetgum (*Liquidambar styraciflua*), Tulip Tree (*Liriodendron tulipifera*), and Shining Sumac (*Rhus copalina*). Shrubs inventoried include the dominant species Blueberry (*Vaccinium corymbosum*), Tall Alder (*Alnus rugosa*), Button Bush (*Cephalanthus occidentalis*), and Lizard's Tail (*Saururus cernuus*). Dominant herbaceous vegetation include: St. John's Wort (*Hypericum mutilum*), Arrow Arum (*Peltandra virginica*), Marsh Fern (*Thelypteris palustris*), Sweet Goldenrod (*Solidago odorata*) and Broom Sedge (*Andropogon virginicus*). Plants in the marsh were dominated by Water Lily (*Nymphaea odorata*), Spatterdock (*Nuphar luteum*), Pickerelweed (*Pontederia cordata*), Yellow-eyed Grass (*Xyris platylepis*), and Bladderwort (*Utricularia fibrosa*).

Vegetation Mapping Project

In co-operation with the Virginia Department of Conservation and Recreation and North Carolina State University, the National Park Service is creating vegetation maps of seven parks including Petersburg National Battlefield. Sample plots of areas of natural vegetation in these parks will be intensively studied to identify vegetation type and the extent of cover for each species within the plots. This data will be correlated with aerial photos, topographic maps, and

soil surveys to determine and classify plant communities according to National Vegetation Classification System descriptions. The end product will be a complete map of the vegetation classes for Petersburg NB. To date 5 percent of the fieldwork has been completed. The fieldwork is expected to be completed in fall, 2004.



NPS staff inventorying potential trails.

Unique Communities

An occurrence of a Granitic Flatrock natural community has been documented on existing park lands in Five Forks. This community is classified as Woolly Ragwort (*Packera tomentosa*) - Willdenow's Croton (*Croton willdenowii*) - Little Bluestem (*Schizachyrium scoparium*) - Rock Spikemoss (*Selaginella rupestris*) Herbaceous Vegetation (Granite Flatrock Complex, Perennial Zone, CEGLO04298) in the U.S. National Vegetation Classification where it has a G3 conservation rank. A G3 conservation rank is defined by the Natural Heritage Program as being either very rare and local throughout its range or found locally in a restricted range; or vulnerable to extinction due to other factors. Usually fewer than 100 occurrences are documented.

Wildlife and Aquatic Life

The combination of mixed hardwood/pine forests and open fields at Petersburg NB provide habitat for a variety of wildlife. Typically encountered species include white-tailed deer (*Odocoileus virginianus*), Eastern cottontail rabbit (*Sylvilagus floridanus*), groundhog (*Marmota monax*), opossum (*Didelphis virginiana*), skunk (*Mephitis mephitis*) and raccoon (*Procyon lotor*). Avian species utilize the wooded and open field habitats at Petersburg NB during migration, as year-round resident species or winter residents. Common species to be expected at various times of the year at Petersburg NB are Northern cardinal (*Cardinalis cardinalis*), Northern mockingbird (*Mimus polyglottos*), Carolina chickadee (*Poecile carolinensis*), Red-tailed Hawk (*Buteo jamaicensis*), Eastern towhee (*Pipilo erythrophthalmus*), Yellow-rumped warbler (*Dendroica coronata*), Pine Warbler (*Dendroica pinus*), and Dark-eyed Junco (*Junco hyemalis*). Bald eagles are known to nest along the James River and may be observed at times in the vicinity of City Point. Ospreys have been observed along the Appomattox and James Rivers.

Fish

A survey is being conducted by park staff in cooperation with Shenandoah National Park. The Eastern Front survey conducted on November 19, 2002 resulted in the collection of 7 species from Harrison Creek/Branch Creek and 2 species of fish from Poor Creek. A survey was completed for Hatcher's Run in the Five Forks Unit in the spring of 2003.

Reptiles and Amphibians

The Department of Biology-University of Richmond is conducting an inventory of reptiles and amphibians. The survey will

carry out a habitat-based inventory of amphibians and reptiles that will obtain a list of the species that occur-including any RTE or Natural Heritage listed species-and associate each species with specific habitat types, and provide quantitative estimates of relative abundance of selected species. To date, 20 species of amphibians and 27 species of reptiles have been documented. Begun in September 2002, the project is scheduled to be complete by Fall 2004.



Surveying for fish in Hatcher's Run.

Birds

The Center for Conservation Biology at the College of William and Mary is coordinating and conducting all aspects of an avian inventory on selected parks listed within the mid-Atlantic Network, including Petersburg NB. Standardized survey techniques will be used to identify bird species in the various habitats within Petersburg NB including specific surveys for nocturnal bird species, wading bird colonies, and nesting bald eagles. There are three interrelated objectives of the bird inventory and monitoring program: 1. Document through existing data or targeted fieldwork, at least 90% of the predicted species of birds currently estimated to occur on park lands; 2. Describe the distribution and relative abundance of species of special concern,

such as Threatened and Endangered species, exotic and other species of special management interest occurring within park boundaries; and 3. Provide the baseline information needed to develop a general strategy and design for monitoring avian species at Petersburg NB that can be implemented once inventories have been completed. To date, 142 species have been documented park-wide. The scheduled completion date for the bird inventory is November 2004.



Park Biologist showing snake to school group.

Small Mammals

Although still in the planning process, an assessment of the status of mammals on Petersburg NB lands will be conducted by the Department of Biology of Virginia Commonwealth University. The assessment will consist of a review of published literature, existing databases and historical records stored in the park to develop a database of mammal species (excluding bats) that possibly occur. Field surveys will supplement the data gathering and provide information on the presence, distribution, and relative abundance (for species of concern) of mammal species in forests, grasslands, agricultural fields, riparian areas, marshes, rock outcrops, etc. on the existing lands at Petersburg NB. The completion of the project is scheduled for January 2005.

Rare, Threatened and Endangered Species

The Federal Endangered Species Act of 1973, as amended, requires all federal agencies to consult with the United States Fish and Wildlife Service (USFWS) before taking any actions that could jeopardize the existence of any listed or proposed species, or result in the destruction or adverse modification of critical or proposed critical habitat. Critical habitat, as defined in the Act, is an area that has been designated by USFWS as essential

The Division of Natural Heritage of the Virginia Department of Conservation and Recreation conducted an inventory of Rare, Threatened and Endangered (RTE) species in the park. Data collection began in the winter of 1988 with a review of the Department of Natural Heritage database. Fieldwork began in April 1990 and continued through May 1991. Habitat of potential rare species within the park was surveyed during the appropriate season for the target rare animal and plant species. Data were also collected



Harrison Creek winds through the Eastern Front.

to the conservation of an endangered species. The first step in the consultation process is to obtain a list of protected species from the USFWS which was sent in a letter dated August 13, 2002.

When a park has an endangered species, the staff will monitor the location of what areas they inhabit, and whether special management is required to maintain or increase the population. Park managers also consider the species that formerly occurred in the park and whether they can be reestablished. In some cases, management consists largely of recording the locations of endangered species, monitoring their well-being, and protecting their habitat. Some endangered plants are treated this way.

on rare species found near park boundaries to determine whether they might be also found in the park, or whether they are deterred by current management practices.

Animals

No rare, endangered or threatened animals were found during the Natural Heritage surveys conducted in 1990-1991 at Petersburg NB. When complete, the current inventory projects may provide more up to date documentation on the possible presence of RTE species on existing Petersburg NB lands. The existence of RTE animal species on lands proposed for acquisition is unknown. Records derived from the database created by the Natural Heritage Program of the Virginia Department of Conservation and Recreation lists animals

ranked as rare, threatened, endangered or of concern for Prince George, Dinwiddie Counties and the City of Petersburg.

The records are comprised of 1 damselfly, 7 mollusks, 1 crayfish, 2 amphibians, 3 fish, and 3 bird species and provide a broad geographical indication of RTE species in the Petersburg region.

Plants

The only unique vegetation community documented on lands within the current park boundary is the Granitic Flatrock Community that occurs at Five Forks.

A search of the Virginia Department of Conservation and Recreation Division of Natural Heritage web-site produced a list of 51 vascular plants, 2 non-vascular plants of special concern or endangered for Prince George, Dinwiddie Counties and the City of Petersburg. Of these, eight species were recorded near Petersburg NB: Cuthbert's Turtlehead (*Chelone cuthbertii*), Spreading Pogonia (*Cleistes divaricata*), Toothache Grass (*Ctenium aromaticum*), Ten-angled Pipewort (*Eriocaulon decangulare*), New Jersey Rush (*Juncus caesarensis*), White-fringed Orchis (*Plantanthera belpharaglottis*), Yellow Trumpets (*Sarracenia flava*) and Northern Pitcher plant (*Sarracenia purpurea*). All of these species occur in low-nutrient groundwater seepage areas and are most commonly encountered where there is an open canopy. The habitat was formerly abundant in the Petersburg area and small remnants of habitat are still known in the park vicinity and may be present on lands proposed for acquisition. Thorough assessment and inventory of habitats on expansion lands for RTE species would be completed prior to any scheduled construction or rehabilitation projects.

SOCIAL AND ECONOMIC ENVIRONMENT

Region of Influence

Petersburg National Battlefield is comprised of multiple units encompassing the cities of Petersburg and Hopewell and counties of Prince George and Dinwiddie. Grant's Headquarters at City Point is within the city limits of Hopewell. The Home Front and portions of the Eastern Front are within the city limits of Petersburg; the remainder of the Eastern Front is located in Prince George County. The Western Front and Five Forks are located in Dinwiddie County. These four jurisdictions are considered to be the region of influence for potential socioeconomic impacts and are described below as the affected environment.

City of Petersburg

Petersburg occupies a land area of approximately 23 square miles with the Appomattox River defining its northern boundary. Petersburg is the center of the Appomattox Basin regional economy which includes the counties of Chesterfield, Dinwiddie and Prince George and the cities of Hopewell and Colonial Heights. Like other independent cities in Virginia, Petersburg employs the "council-manager" form of government. An elected city council is the governing body and an appointed city manager is responsible for the city's administration.

City of Hopewell

Hopewell occupies a land area of 11 square miles at the confluence of the James and Appomattox Rivers. Prince George County borders Hopewell on the south and west, the James River forms the eastern boundary and the Appomattox River the northern

boundary. Hopewell is an independent city utilizing the "council-manager" form of government. City Point is an extension of land at the confluence of the James and Appomattox Rivers and is the location of Grant's Headquarters.

Prince George County

Prince George County is 276 square miles and is primarily a developing suburban county, bordered on the north by the James River and the City of Hopewell and on the west by the Appomattox River and the City of Petersburg. The county seat is Prince George, Virginia. Prince George County is governed by an elected five-member Board of Supervisors, with an appointed County Administrator serving as the Chief Administrative Officer.



Monument at Old Dinwiddie Courthouse listing county battlefields.

Dinwiddie County

Dinwiddie County is 501 square miles, bordered by the Counties of Chesterfield on the north, Amelia and Nottoway on the west, Brunswick, Greensville and Sussex on the south and Prince George on the east. The County's southwestern boundary is formed by the Nottoway River and its northern border by the Namozine Creek and Appomattox River. The unincorporated community of Dinwiddie serves as the County seat. An elected Board of Supervisors and a county administrator who serves as the chief administrative officer govern Dinwiddie County.

DEMOGRAPHIC AND ECONOMIC PROFILE

Population

The demographic profile for the four jurisdictions in which the Petersburg National Battlefield lands are located is presented in Appendix B and based on information from United States 2000 census data and employment information. Prince George County's population of 33,047 increased by 21% from 1990 and Dinwiddie County's population of 24,533 increased by 17% from 1990. In comparison, the population of the Commonwealth of Virginia in 2000 was 7,078,515, a 1.5% increase from 1990. The cities of Petersburg and Hopewell both exhibited a decrease in population; Petersburg's population of 33,740 is 12% less than the 1990 population. The City of Hopewell population of 22,354 decreased 3% from 1990.

Future Population Growth

Population projections by the Virginia Employment Commission continue to forecast trends in growth to suburban areas of Prince George and Dinwiddie Counties and a continued loss of population to the Cities of Petersburg and Hopewell.

The Dinwiddie County population is projected to grow approximately 10% from 24,533 to 26,800 by 2010 and another 10% to 28,600 by 2020. The Dinwiddie Comprehensive plan states that continued growth in the county will be highly dependent on future economic growth. Residential development and the availability of public water and sewage facilities in the northeastern portion of the county may increase growth beyond government predictions. Prince George

County's population is predicted to increase 4.2% to approximately 34,504 by 2010, based on Virginia Employment Commission figures. City of Petersburg population projections to 2010 indicate continued loss in population of 6.7% to 31,520. The current projected 2010 population for Hopewell is 21,801, a decrease of approximately 2.5%.

Racial Demographics

Prince George County's racial demographics based on the 2000 Census data are 61% White, 32% Black, 2% Asian and 5% Hispanic. The racial composition of Dinwiddie County is similar to Prince George County. Dinwiddie County is comprised of 64% White, 34% Black, 1% Asian and 1%, Hispanic. By comparison, the Commonwealth of Virginia's population is 72% White, 20% Black, 3% Asian and 5% Hispanic. The City of Hopewell's racial composition resembles the county with 62% White, 34% Black, 1% Asian and 3% Hispanic. The City of Petersburg is 19% White, 79% Black, 1% Asian and 1 % Hispanic.

Educational Attainment

Commonwealth of Virginia residents who have attained at least a high school degree is approximately 81% of the total population. The Prince George County population has the highest educational attainment with approximately 82% of residents in the region of influence having at least a high school diploma, consistent with Virginia. The percentage of residents attaining at least a high school degree for the remaining three jurisdictions, City of Hopewell, Dinwiddie County, and the City of Petersburg, are approximately 70%.

College degree attainment figures are 19% for Prince George County, 11% for Dinwiddie

County, 15% City of Petersburg and 10% for City of Hopewell. These figures are markedly lower than the Virginia figure of 30% for attainment of a college degree.

Economy

Labor Force and Income

The employment rate for the Counties of Prince George and Dinwiddie are 49% and 60%, respectively, lower than the Commonwealth of Virginia employment rate of 62%. The cities of Petersburg and Hopewell have employment rates of 50% and 56%, respectively. The unemployment rates are 2% for Prince George County, 2% for Dinwiddie County, 5% for Petersburg, 4% for Hopewell as compared to the Commonwealth of Virginia rate of 3%.

The median household income is \$49,877 for Prince George County, \$41,582 for Dinwiddie County, \$33,196 for the City of Hopewell, and \$28,851 for the City of Petersburg as compared to \$46,677 for the Commonwealth of Virginia.

Employment

Non-manufacturing industries account for a larger share of the economy of Prince George County than manufacturing. The US Army Combined Arms Support Command and Fort Lee, adjacent to the Eastern Front of the Petersburg NB, is the largest employer in Prince George County. Fort Lee has a total population of 13,474 and employs an additional 2,507 civilians with a net annual payroll of over \$94 million.

Other major employers include the Federal Correctional Institute, Brenco, Inc., Food Lion Distribution Center, Tarmac Lonestar, Inc. and Standard Motors.

Agriculture is a major contributor to the economy of Dinwiddie County. In addition

to livestock and poultry, Dinwiddie County produces a variety of crops including cotton, corn, wheat, hay, alfalfa and soybeans. Dinwiddie County is home to a limited number of industrial operations including Chapparral Steel, Vulcan, Tindall, Wal-Mart Distribution Center, Nippon Wiper Blades and Phillip Morris.

In Prince George and Dinwiddie Counties the number of people who live and work in the same county has decreased over the last decade. The majority of commuters in Prince George County commute to Richmond and Chesterfield County. The majority of commuters in Dinwiddie County commute outside the county as well. A joint effort between Dinwiddie County, Prince George County, Petersburg and Hopewell is exploring the potential for a regional industrial park to be located in northeastern or eastern Dinwiddie County.

The City of Petersburg has seen a decline in the number of industries operating within the City and is working to diversify its economy and provide jobs for residents. Industries still prominent in Petersburg include medical services, optical lenses and equipment as well as government services. Primarily a residential development, Hopewell's major industries include Hercules, John Randolph Hospital, Allied Signal and Stone Container Corporation.

Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Under the executive order, federal agencies are required to consider the environmental and human health effects

of their policies, procedures, and projects on minority and low-income populations.

The percentage of families living below the poverty level in the Commonwealth of Virginia was 7% in 2000, only slightly higher than Prince George County and Dinwiddie County at 6.5% and 6.6%, respectively. Seventeen percent of residents in Petersburg and 13% of residents in Hopewell live below the poverty level.

A factor that influences unemployment and poverty levels in a population is the education level attained. Educational attainment figures for the region show that 18% of Prince George County, 30% of Dinwiddie County, 28% of the City of Hopewell, and 31% of the City of Petersburg residents have not received a high school diploma.

Land Use

Petersburg National Battlefield is currently comprised of 2,659 acres of protected, historically significant resources. Only a small portion of the park acreage is developed. The visitor center, auto tour route, administrative and maintenance buildings in the Eastern Front; the visitor contact stations and historic buildings at Grant's Headquarters at City Point; and Poplar Grove Cemetery comprise the developed areas of the park. The remaining areas are protected as open space in a mixture of forested and open habitats. There are two areas where the park has granted agricultural leases: 96.7 acres in Five Forks and 36 acres in the Eastern Front. The 7,238 acres being proposed for acquisition are currently open space and either in agricultural use or forested.

Land use in the Petersburg NB area, particularly in northeastern Dinwiddie County is currently undergoing change from a more rural agricultural character to more suburban and industrial development. Growth in these areas is primarily a result of increase in development along the major highways and the expansion of Petersburg suburbs into northeastern Dinwiddie County. Table 2 presents a summary of the acreage, land use, and potential future land use for the lands proposed for acquisition. Community Planning Areas and Urban Planning Areas in Dinwiddie County's Comprehensive Plan will be encouraged to absorb 75% of future residential and 85% of future commercial/industrial development. Most of the lands proposed for acquisition in the Western Front and Five Forks are located in these Community and Urban Planning Areas.

County of Prince George

According to the Comprehensive Plan for Prince George County (1998) 17% of the county is in agricultural use, 69% is in forest land either for commercial use or as woodland for farms, and the remaining 14% is in residential, commercial, industrial, or public use. Major growth areas are south of the City of Hopewell and south and east of the City of Petersburg.

Prince George County has identified the southeast area of the county as the area of major growth and development based on historical and current population data and physical development trends. Constraints placed on development in Prince George County include critical environmental areas, Chesapeake Bay Preservation areas, floodplains, erodible soils, wetlands and

TABLE 2
LAND PROPOSED FOR ACQUISITION, LAND USE AND POTENTIAL DEVELOPMENT

Unit/Battlefield	Acreage	Present Land Use	Potential Development
City Point	3	Undeveloped Residential	Residential
Eastern Front			
Petersburg Assault	95	Agricultural	Industrial
Crater	15	Undeveloped Urban	Cemetery Expansion
Fort Stedman/Picket Line Attack	879	Undeveloped Urban & Rural/Agriculture	Cemetery Expansion
Western Front			
Globe Tavern	611	Rural/Agriculture	Urban and Community Planning Area Dinwiddie County
Jerusalem Plank Road	222	Rural/Agriculture	Urban and Community Planning Area Dinwiddie County
Peebles Farm	88	Rural/Agriculture	Urban and Community Planning Area Dinwiddie County
Petersburg Breakthrough	33	Undeveloped Residential	Urban Planning Area Dinwiddie County
Boydton Plank Road	99	Rural/Agriculture	Urban Planning Area
Hatcher's Run	1710	Rural/Agriculture	Quarry Development Proposed
Ream's Station	506	Rural/Agriculture	None • Rural Conservation Area
White Oak Road	1925	Rural/Agriculture	None • Rural Conservation Area
Five Forks	1047	Rural/Agriculture	Community Planning Area • Dinwiddie County

prime agricultural lands. No lands are proposed for acquisition in Prince George County.

Critical environmental areas in Prince George County are the Appomattox River area, the James River area, and the Blackwater River and Bottomlands area. These areas have been delineated as Chesapeake Bay Preservation areas; the James River watershed has also been designated a Chesapeake Bay preservation area. Designated prime agricultural land comprises 37 percent of the County. To preserve agricultural activity and critically important environmental areas within the County, limitations have been placed on these lands for development in the residential, commercial and industrial categories.

Dinwiddie County

Approximately 75 percent of Dinwiddie County is designated as commercial forestland, owned by three timber companies. Residential development has been concentrated in the northeastern section of the county, mostly as a result of the expansion of the City of Petersburg. Much of the commercial and industrial development has followed the residential pattern and is located in the northeastern section of the county. An industrial park has been created at the site of the Petersburg-Dinwiddie Regional Airport. Portions of the county have also experienced sprawl, with development in rural areas of non-farm homes along major and rural highways. Existing park lands are subject to development pressures as development of suburban housing continues. Forest industry facilities are located mainly in the western half of the county however, forestry practices occur throughout the county. Total acreage dedicated to public

or private recreational use is less than one percent. In 1964, there were almost 1,000 farms in Dinwiddie County occupying an estimated 137,734 acres. By 1992, the number of farms had decreased to 344, occupying approximately 85,954 acres. Farm mechanization and urban expansion contributed to the decline. By 1997, the trend of decline had changed with 351 farms occupying 89,260 acres.

In Dinwiddie County two areas have been identified as critical environmental areas: Appomattox River area and the Nottoway River and Bottomlands area.

City of Petersburg

The City of Petersburg has two distinct patterns of residential development, an older, historic area lies north of I-85 and newer residential areas lie south of I-85. The City of Petersburg adopted a Historic Zoning Ordinance in 1973 to protect the architectural and cultural heritage of the city and has an Architectural Review Board that administers the ordinance. A number of non-profit and municipal groups provide guidance on preservation efforts in Petersburg. Commercial development within the city limits is concentrated along major roads emanating from the central business district and new development along Route 301 and Route 460. Industrial development occurs along the Appomattox River and in the southeast and southwest sections of Petersburg. Reclassification of 195 acres of industrially zoned land to commercial, railroad, or public use has been offset by new industrial development in or around Route 460 and on smaller parcels in the Downtown/Riverfront area. A total of 5,095 acres of undeveloped land is within the city limits with, 3,586 of those acres classified as being unsuitable for future developments.

The remainder is comprised of environmentally sensitive lands, including those regulated by the Chesapeake Bay Preservation Act of 1989, hundred-year floodplain areas, highly erodible soils and wetlands.

City of Hopewell

In its land use plan, the City of Hopewell identifies 17% of the existing city as available for potential development. Classification of developed land is as follows: 56% residential, 15% public, 5% commercial and 24% industrial. Three acres proposed for acquisition by the park at City Point are currently undeveloped and lie within a residential neighborhood adjacent to the current NPS unit at City Point. Much of the vacant land in the City of Hopewell has limitations on development due to environmentally sensitive conditions such as highly erodible soils, hundred-year floodplain areas and areas within the Chesapeake Bay Resource Management Area (RMA).

Planning Agencies and Comprehensive Plans

Dinwiddie County

In Dinwiddie County, a planning director and seven-member planning commission provide oversight on all planning, zoning, and land development activities. The County Board of Zoning Appeals reviews all zoning matters including variances and exceptions to zoning ordinances. The Planning Commission also undertook a complete revision of the 1996 comprehensive plan that resulted in the Dinwiddie Comprehensive Plan Update, 2002.

Prince George County

Similarly, Prince George County has a planning director and a seven-member planning commission as well as a County Board of Zoning Appeals. The Prince George County Comprehensive Plan was first adopted in 1978 and most recently updated in 1998.

City of Hopewell

The City of Hopewell Planning Commission prepared a comprehensive land use plan adopted by the City Council in December 2001. The Comprehensive Land Use Plan contains a Water Quality Protection Plan within the Land Use Plan as required of local governments within their jurisdiction by the Chesapeake Bay Local Assistance Board.

City of Petersburg

Petersburg first adopted a comprehensive plan in 1968; the most current plan was adopted by the City Council in December 2000. The current comprehensive plan was prepared under the direction of the City's Planning Department which consists of a Planning Commission and City Planner.

Appomattox Basin Industrial Development Corporation/Virginia Gateway Region Governed by a Board of Directors, the Appomattox Basin Industrial Development Corporation-a private, non-profit organization-provides assistance to corporate clients to find locations for their businesses in the Virginia Gateway Region which is comprised of five counties, Prince George, Dinwiddie, Chesterfield, Sussex, and Surry; and three cities, Hopewell, Petersburg, and Colonial Heights.

Crater Planning District

The Crater Planning District Commission is comprised of 10 local governments in south-central Virginia. These are the cities of Colonial Heights, Emporia, Hopewell, and

Petersburg, and the counties of Chesterfield, Dinwiddie, Greensville, Prince George, Surry and Sussex. The major focus of the Crater Planning District Commission is economic, industrial and small business development reflecting the priorities established by the member localities. Additional involvement of the Crater Planning District in environmental issues occurs in response to local needs and includes the Chesapeake Bay Preservation Act, air quality standards and solid waste management. The Commission also addresses regional transportation issues and assists localities in their transportation planning efforts.

Land Use and the Chesapeake Bay Preservation Act of Virginia

The Chesapeake Preservation Act of 1988 was adopted by the legislature of Virginia to improve the quality of water entering the Chesapeake Bay from drainages in Virginia. The Act requires each local government in Tidewater Virginia to designate preservation areas: areas that if developed would impact the water quality of the Bay and/or its tributaries. Chesapeake Resource Management Areas may also be designated by local governments for limited development in concert with Chesapeake Bay Act regulations. Prince George County and the Cities of Hopewell and Petersburg have lands designated under the Act. Dinwiddie County is not a jurisdiction in the Tidewater, however, the Dinwiddie County Comprehensive Plan recommends the identification of environmentally sensitive areas and the use of management practices and techniques to protect those areas.

Regional Open Space and Recreation Resources

The Crater Planning District-including the four jurisdictions of Prince George and Dinwiddie County and the Cities of Petersburg and Hopewell-currently provides 85% of the local and regional park acreage and facilities needed to meet the existing demand for outdoor recreational activities. Recommendations of the 2002 Virginia Outdoor Plan include providing additional opportunities for water-based recreation and close-to-home recreation such as ball fields and playgrounds. The plan also encouraged Petersburg NB and surrounding localities to develop additional opportunities for trails and linkages to other Civil War sites. Federal recreational facilities in the region include the James River National Wildlife Refuge in Prince George County which contains approximately 4,300 acres on the James River available for nature observation, environmental education and limited hunting.

Few state parks are established within the Petersburg region of influence. The Virginia Outdoor Plan 2002 recommends the evaluation of waterfront property as it becomes available along major tidal rivers or tributaries for potential acquisition and development as regional or state park land.

Dinwiddie County and Prince George County have regional park lands along portions of the Appomattox River. In Prince George County, near I-295, a small piece of property is being developed for fishing, picnicking and trails at the historic location of embarkation for federal troops during the siege of Petersburg. In Dinwiddie County, below Lake Chesdin is Appomattox Riverside Park, developed by the City of Petersburg.

The Virginia Outdoor Plan recommends the expansion of recreation opportunities and a connection with the City of Petersburg waterfront via a trail system.

Appomattox River Corridor Plan

The Crater Planning District prepared an Appomattox River Corridor study through its Coastal Resources Management Task Force, the Appomattox River Corridor Working Group and the general public. The two-part study addresses existing conditions and recommends an action plan. The National Park Service's Rivers, Trails, and Conservation Assistance Program provided technical assistance support. In addition to the formation of the Friends of the Appomattox River non-profit group, ten recommendations were agreed upon, including the development of a regional trail system, the development of a brochure and self-guided tour map to illustrate river features and locations, and the development of a rail and river boat tour loop. These recommendations would increase the potential for tourism and recreation in the Home Front and City Point.

Lower Appomattox River Corridor Greenway Plan

As recommended by the Appomattox River Corridor Plan, the Community Design and Assistance Center of Virginia Technical College in Blacksburg, Virginia has created a conceptual greenway study of Appomattox River for the Friends of the Appomattox River organization. The study area consists of approximately 23 miles of the Appomattox River from Lake Chesdin to the confluence with the James River. The proposed trail may consist of bicycle and multi-purpose trails linking natural, cultural, heritage, and other linear open spaces between Lake Chesdin and City Point. A critical component of the

system is the Virginia Electric Power Company (VEPCO) Canal and the Petersburg waterfront where historic buildings and museums are located pertaining to the Civil War. The greenway would provide an additional attraction to the Home Front and City Point areas of Petersburg.

The Crater Planning District Commission has prepared a bikeway plan to assist the Tri-Cities area—Petersburg, Colonial Heights, Hopewell and portions of Chesterfield, Dinwiddie and Prince George Counties—with guidelines for bikeway planning. A bikeway system is proposed for northeastern Dinwiddie County with plans for a trail that will link the county's Civil War battlefield and historic sites with recreation areas.

Lee's Retreat Driving tours, including Wilson-Kautz Raid, Lee vs. Grant and the James River Plantations are within the Crater Planning District. A Birding and Wildlife Trail is currently under development by Virginia's Department of Conservation and Recreation and will link bird watching areas in the state. Richard Bland College which straddles Prince George and Dinwiddie Counties near the Globe Tavern battlefield and the Appomattox River canoe launch located in Dinwiddie County are the nominated birding trail locations in the region of influence. In Hopewell, the Cabin Creek Trail network will connect several recreational facilities and parks and could eventually connect to the Appomattox River Corridor Trail.

Infrastructure

Electricity

Dominion Virginia Power, a subsidiary of Dominion Power, supplies electric power to all four jurisdictions. Prince George County receives power from its generating facilities in Chesterfield and the Surry nuclear station on the James River. Prince George Electric Cooperative distributes electrical power to their customers in Prince George County. In Dinwiddie County and the City of Petersburg, Southside Electric Cooperative supplies electric power. Southside Electric Cooperative services the rural areas not supplied by Virginia Power and purchases electric power from both Virginia Power and Appalachian Electric Power.

Natural Gas

Natural Gas is available to all four jurisdictions through Columbia Gas of Virginia, a Columbia Energy Group distribution company. Two interstate transmission lines owned and operated by Columbia Gas traverse the western and central areas of Prince George County.

Water Supply

The Appomattox River Water Authority (ARWA) maintains Lake Chesdin, a 17-mile long impoundment on the Appomattox River and supplies water to Prince George and Dinwiddie Counties and the City of Petersburg. The ARWA treatment facility has a current capacity of 46 million gallons per day (mgd) with plans to expand in 2010 to supply up to 70 mgd.

Prince George County water customers also receive water from the Virginia American Water Company. The Virginia American Water Company supplies the Route 156 and Jefferson Park areas. The more rural areas of Prince George County obtain potable water from several county-operated systems.

The Dinwiddie County Water Authority furnishes water facilities in the northern portion of the County. Water is purchased from Dinwiddie County through the ARWA. As in Prince George County, many rural areas obtain their water supply from the local groundwater supply.

Petersburg maintains six water storage tanks that are located throughout Petersburg. Hopewell obtains its drinking water from the Appomattox River from a pumping station at the confluence of the James and Appomattox Rivers. Virginia American Water Company supplies water to Hopewell and suburban areas of Prince George County.

Wastewater Treatment

The collection of wastewater generated in Prince George County is under the jurisdiction of the Prince George County Utility Department. According to the Prince George County Comprehensive Plan Update (1998), nearly all of the densely populated areas of the County are connected to central sewage treatment facilities. As a member of the South Central Secondary Wastewater Authority, the wastewater is treated at facilities in Petersburg and Hopewell. These facilities can process 70 million gallons of effluent per day. The City of Hopewell Regional Wastewater Treatment Facility is a 50-mgd secondary treatment plant that also treats wastewater from Fort Lee. It was specifically designed to treat industrial waste. Dinwiddie County is also a member of the south Central Wastewater Authority located in Petersburg. Approximately one million gallons of effluent per day are treated from the northern portion of Dinwiddie County through this system. The Courthouse area of Dinwiddie County is also serviced by a 50,000 gallon per day sewage treatment plant constructed in 1993.

Solid Waste Collection and Disposal

Prince George County provides on site or door-to-door collection of solid waste for all residential, commercial, and industrial locations in the County. The service is contracted to private firms. The City of Petersburg operated a landfill for solid waste disposal until 1994 when it was turned into a drop-off facility receiving waste from Prince George County and the City of Petersburg. Dinwiddie County operates a transfer station and container sites for residential refuse and recyclables in multiple locations throughout the County. The transfer station is located near Five Forks. Both counties ceased landfill operations in 1994. All of the waste collected at the transfer stations is delivered to Atlantic Waste in Sussex County for disposal. The City of Hopewell contracts with a private waste hauler to pick-up and dispose of solid waste in the City; the waste is shipped to a landfill in Henrico County.

Hazardous Waste

There are no identified hazardous waste sites, superfund sites or archived sites in Petersburg NB or the proposed expansion lands. Most of the lands of interest are either agricultural/rural or forested. Prior to any land acquisition, a more specific and thorough assessment of potential hazardous waste sites will have to be conducted.

Transportation

The Petersburg area has a multi-modal transportation network. Air, rail, and water transportation is available in addition to the primary and secondary road network. According to the Draft Petersburg Comprehensive Plan (2000) traffic on these roads has a significant impact on local traffic patterns and the health of the local economy. Much of the area's congestion is due to peak demand commuter traffic. Prince George

and Dinwiddie Counties are projected to grow more than the cities. There is currently a movement from urban to suburban living that increases commuter traffic and highlights the need for public transportation.

Tri-Cities Transportation Area

The Tri-Cities Transportation Study Area is comprised of the cities of Petersburg, Colonial Heights and Hopewell, and portions of Chesterfield County, Prince George County and Dinwiddie County. Representatives from each locality, along with representatives from the Virginia Department of Transportation, the Virginia Department of Rail and Public Transportation, Federal Highway Administration and Federal Transit Administration comprise the Metropolitan Planning Organization (MPO) for the Tri-Cities area.

The MPO is responsible for conducting the continuing, cooperative and comprehensive transportation planning process as required by the Transportation Equity Act for the 21st Century (TEA-21). The MPO consists of a Technical Committee comprised of staff representatives from governmental agencies and a Policy Committee comprised of local elected officials and appointed agency representatives. The Technical Committee advises the Policy Committee on the development of metropolitan transportation plans and programs for the Tri-Cities area. The Tri-Cities transportation study area is located in southeastern Virginia within the I-85, I-95 and I-295 travel corridors. Major arterial routes servicing the area are Virginia Route 10, Virginia Route 36, US 301, US 1, US 460, Virginia Route 156 and Virginia Route 144. The MPO encourages a multi-modal transportation system with highway, transit, rail, pedestrian and bicycle transportation that is accessible to its entire population.

Localities within the study area also have access to the international water ports and airports located in Richmond and Norfolk.

At the request of the Tri-Cities MPO and the Governor of Virginia, Tri-Cities was designated a Transportation Management Area (TMA) in 1994. This designation helps to assure consistency in development of transportation and transportation-related air quality plans and programs.

The transportation plan for Prince George County proposes improvements to the County transportation system in order to provide long-range planning in concert with the Tri-Cities MPO 2023 Transportation Plan (2000). Included are plans for a county arterial, Route 460 and the Route 156 widening to Hopewell city limits. Route 460 corridor improvements are the top regional transportation priority among local government leaders. Additional information is provided in Appendix B.

Public Transportation

Public transportation in the City of Petersburg is available through Petersburg Area Transit (PAT). PAT has a service area of approximately 6.7 square miles, with a service population of 30,000. Eight routes are operated out of a central transfer point in central downtown Petersburg. Hopewell has identified a need for mass transit within its limits. Currently there is no bus service within the city; a total of four taxi companies operate within the City of Hopewell. Trailways, Inc. provides inter-city bus service between Dinwiddie County and Petersburg. Dinwiddie County does not currently have an identified need for public transportation.

Air Service

Full commercial air service is provided at Richmond International Airport, approximately 30 minutes from Prince George County.

Rail Service

Amtrak supplies passenger rail service to the Petersburg area. The rail station is located in Ettrick on the north bank of Appomattox River. Norfolk Southern Railway and the Chesapeake Seaboard System Railroad (CSX) provide freight service. Norfolk Southern Railway is a major connector serving the East Coast from New York to Florida. CSX connects the Midwest with all major East Coast markets.

The United States Department of Transportation (USDOT) designated five high-speed rail corridors nationwide in 1992— including the Southeast Corridor from Washington, D.C. to Richmond, Raleigh and Charlotte. In response to the proposal for a southeast high-speed rail corridor, Virginia, North Carolina, South Carolina and Georgia created a four-state coalition to plan, develop and implement the Southeast High Speed Rail Corridor. The high-speed rail line is planned to ease the increasing highway and airport congestion in the southeast. Two alternatives were proposed: the "A-line" (preferred) which would parallel Interstate 95 and the "S- line" which would utilize an abandoned rail line from North Carolina, northeast to Petersburg and Richmond through Dinwiddie County. To minimize impacts to the environment, and reduce construction costs, the states plan to use primarily existing tracks and rail corridors. Modern high-speed trains will be used in the corridor to reduce travel time. A recommendation

report was completed in early 2002, indicating that Alternate A would have the best potential for high-speed rail service while having the fewest environmental impacts. The Final Environmental Impact Statement (EIS) was completed in June. The Federal Highway Administration and Federal Railway Administration issued a formal Record of Decision in October 2002. This federal document confirms and approves the corridor along the "A-line" route as recommended by the Tier I EIS.

Waterways

The Appomattox and James Rivers provide navigable waters along the coastline of Prince George County linking the county to Virginia's port facilities at Hampton Roads and Richmond.

Highways and Roads

Transportation to and from Petersburg NB encompasses the jurisdictions of Prince George and Dinwiddie Counties and the Cities of Hopewell and Petersburg. Four major north-south interstates, I-95, I-85, I-295 and US Route 460, bring travelers within a few miles of the Petersburg NB. I-95 is the principal north-south highway. I-85 originates in Petersburg and angles southwest through Dinwiddie County providing access to the Five Forks area of Petersburg NB and ultimately crosses into North Carolina. I-295 bypasses Petersburg and provides a connection for interstate highways and arterials. I-64 traverses the area east-west connecting to Norfolk-Hampton Roads in the east. US Route 460 crosses Dinwiddie County, passes through Petersburg and is a major business route for east-west traffic.

Secondary roads comprise the tour route from the Eastern Front to Grant's Headquarters at City Point. The tour route to the Five Forks Unit via the Siege Line Tour in the Western Front incorporates approximately 25 miles of secondary roads and streets. A third driving route, the Defense Line Tour, utilizes Simpson Road from Route 1 to Route 301. The Petersburg Comprehensive Plan states that US Routes 1, 301, 460 and VA Route 36 are all in good condition. Recent upgrades have been made to several area roadways including signalization in the mid-1990s.



Interpretive trails provide an opportunity to experience battlefield landscapes.

Future Planning

Several localities in the Tri-Cities area have been awarded Transportation Enhancement (TE) funds:

- Appomattox River Heritage Trail and Phase II
- Route of Lee's Retreat Consortium and Driving Tour
- Central Virginia Civil War Consortium—51 historical sites—project intends to improve and interpret between Fredericksburg and Petersburg accessible from North and South
- Blandford Cemetery Wall restoration and Crater Road Corridor Plan—rebuilding and restoring the historic cemetery walls that line Crater Road and Rochelle Lane—western boundary of the cemetery.
- City Point's Rails and Waterways project to design pedestrian wayside exhibit system and landscaping, paths and to relocate utilities underground. Also envisioned is a continuous pedestrian trail extending along the streets of the City Point National Historic District in Hopewell to improve pedestrian circulation and deter vehicular traffic.
- White Oak Battlefield Site interpretation - establish interpretation and landscape management program including land and viewshed protection measures, site maintenance, visitor safety measures and trail construction.
- Reams' Station and Hatcher's Run site interpretation by Civil War Preservation Trust.

TRAVEL AND TOURISM

Travel and tourism in the region centers on the heritage of the area. Tourists coming to the area can view Civil War sites including Petersburg National Battlefield, historical districts and museums. According to the Virginia Outdoor Plan 2002, Petersburg National Battlefield is the primary regional historic attraction. Pamplin Park, a privately owned 422-acre Civil War Park with museum, exhibits, plantation homes and historic battlefields in Dinwiddie County, provides additional opportunities to experience Civil War history.

Other tourism opportunities include historic plantations along the James River, historic walking tours developed for the City of Petersburg and in Hopewell, the Crescent Hills driving tour, and the African-American Heritage tour. In addition, two museums are available to the public at Fort Lee, the US Army Women's Museum and the US Quartermaster Museum. The region also lies between Williamsburg, Appomattox, and Richmond, three nearby areas of historic interest to regional visitors. Table 3 presents the economic impacts of travel and tourism in the Petersburg region for 1998 and 1999.

Role of the Park

Staff from the NPS Statistical Unit at the Denver Service Center used the Money Generation Model (MGM) and data collected in 2000 from the Eastern Front Visitor Center and Grants Headquarters at City Point to estimate the impact of park visitation on the local and regional economy. Using a visitor count of 50,783 in the MGM, total spending by visitors was estimated. Non-local day users represented 88% and the largest component of visitors to the park, having the greatest economic impact and

TABLE 3**TRAVEL ECONOMIC IMPACTS IN THE PETERSBURG REGION 1998 AND 1999**

	Prince George Co.	Dinwiddie County	City of Petersburg	City of Hopewell
Traveler Spending`1998	\$35,136,036	\$4,856,000	\$26,329,000	\$12,999,000
Traveler Spending`1999	\$36,422,384*	\$5,535,000	\$27,866,000	\$13,033,000
Change from previous year	+3.7%	+14.0%	+5.8%	+0.3%
Travel Payroll	\$7,866,448	\$1,266,000	\$6,354,	\$2,941,000
Travel Employment	522	72	442	218

*Figures for 1999 Prince George County are preliminary. Source: Virginia Tourism Corporation web-site.

totaling over \$1.6 million across all spending categories. Expenditures for 'restaurants and bars' and 'souvenirs and other expenses' accounted for more than 50% of non-local day users' spending, totaling \$428,000 and \$425,000 each, respectively.

Altogether, it is estimated that visitors to the park account for close to \$2 million per year in spending in the local area and represent 2% of regional travel-related income. An approximate \$96,000 is also paid in local and state sales taxes by park visitors each year. Park-related tourism is responsible for 40 jobs in the region, or about 3% of travel-related employment.

Visitor Experience, Use & Facilities

The visitation data in this section was developed from two sources: Visitor Evaluation for Petersburg NB report cards (1996-1998) and the 1991 Visitor Services Project.

Attendance

Between 1993 and 1997, the average yearly attendance was 204,586 people. However, annual visitation declined at an average rate of 8.3 percent in that period, with a 1993

attendance of 254,617 and a 1997 attendance of 177,325. During this same period, the Eastern Front experienced a decline of 4.96 percent, City Point an increase of 1.33 percent and Five Forks an increase of 25.54 percent. The increases at City Point and Five Forks are not significant, as City Point represents approximately ten percent of total visitation and Five Forks one percent.

Visitor Characteristics

More than half of all park visitors come individually or in groups of two. A third of all visitors are in three and four person groups. The relatively high numbers of single people (15 percent) and couples (40 percent) reflect special interests in the Civil War or history in general. The highest attendance numbers are during the summer, when family groups are most common. About 68 percent of all groups are families.

Residents of Virginia represent 26 percent of all visitors. Approximately 15 percent come from neighboring states. The remainder of park visitors primarily come from states in the eastern part of the country. Ten to fifteen percent of park visitors are identified as residents of the region.

TABLE 4**TOTAL SPENDING BY VISITORS TO PETERSBURG NATIONAL BATTLEFIELD, 2000**

Expense Type	Local Day User	Non-local Day User	VFR Overnight Visitor		Total
Motel, hotel, cabin or B&B	0	0		\$134,000	\$134,000
Restaurants & bars	\$15,000	\$428,000	\$8,000	\$38,000	\$489,000
Groceries, take-out food/drinks	\$4,000	\$121,000	\$8,000	\$10,000	\$143,000
Gas, oil, and other vehicle costs	\$6,000	\$260,000	\$6,000	\$17,000	\$289,000
Local Transportation	\$1,000	\$30,000	0	\$8,000	\$39,000
Admissions & Fees	\$5,000	\$207,000	\$2,000	\$12,000	\$226,000
Clothing	\$3,000	\$137,000	\$2,000	\$10,000	\$151,000
Sporting Goods	0	\$10,000	\$1,000	0	\$12,000
Souvenirs and other expenses	\$9,000	\$425,000	\$7,000	\$16,000	\$457,000
Total	\$42,000	\$1,618,000	\$36,000	\$245,000	\$1,940,000

Visitor Center and Contact Stations

Most people reach Petersburg NB on VA Route 36, following it from I-95 or I-295 to the Eastern Front. Visitors must stop at the entrance to the Eastern Front and pay an admission fee of \$3.00 per person or \$5.00 per car. Visitor contact stations are located in Appomattox Manor in City Point and at Five Forks in the converted gas station building on the battlefield.

The primary visitor center, located in the Eastern Front and built in 1967, is a polygonal brick building that echoes the shape of Fort Wheaton. A parking lot to the east serves both the visitor center and Battery 5.

The ground floor of the visitor center includes an information desk, bookstore, static exhibits and a map program. The basement contains a research library, archives, offices and is the focus of interpretive activity in the park.

An overview of the geography of the region, a chronological description of the military actions associated with the Petersburg Campaign, and an introduction to the commanders and units engaged in these

military actions are provided through printed materials and the map program, as well as through presentations by park rangers.

The building is inadequate for some of its functions. It is not able to accommodate the park's current space requirements for large numbers of visitors and student groups or the storage of merchandise and exhibits. The exhibit area lacks the flexibility needed to accommodate new media and changing exhibits. The number of restrooms are inadequate for large groups.

The facility stands in the middle of the Petersburg-Assault battlefield, on ground better sited for interpretation. It is on a bluff site that commanded a view of the city at the site of major Union artillery positions and adjacent to the site of the Jordan house, used by Union and Confederate commanders during the campaign.

In Grant's Headquarters at City Point, the visitor contact station in Appomattox Manor provides park orientation and programs that focus on the Union logistics operation and

on the Eppes family. A video on the logistics operation is available. Two rooms of furnishings that have associations with the manor and the Eppes family are open to the public. Eastern National Association operates a small sales outlet. Restrooms are located to the west side of the house, though again inadequate to handle large groups.

In Five Forks, this visitor contact station is staffed year-round and provides visitor orientation and services using interpretive panels and maps. A few exhibits are located in this small building. Only a portable restroom located outside the building is provided.

Interpretive Themes and Media

Petersburg NB provides the visitor an orientation to the Petersburg Campaign and the opportunity to visit some of the associated battlefields and fortifications. Interpretive themes focus almost exclusively on the military events of the Petersburg Campaign and the commanders and units engaged in the actions. Education programs cover causes of the Civil War at Grant's Headquarters at City Point.

The Statement for Management identifies the interpretive goals for the park:

- Maintain the continuity of major resources and visitor experiences along the entire siege line in a way that allows visitors to understand the siege and defense of Petersburg.
- Create an atmosphere through which visitors can understand the hardships of the Civil War events at Petersburg.
- Using what remains of the field of battle, commemorate and interpret the campaign, siege and defense of Petersburg (1864-65) in the greater context of the Civil War.

The goals are achieved through a broad range of interpretive devices and programs including orientation programs at Appomattox Manor with a video presentation, a map show at the Eastern Front, park brochures and site bulletins, exhibits of artifacts and cannon tubes, wayside panels and other interpretive signs, informal and scheduled ranger-led programs.

Park Tour Routes

The fifteen sites on the two park tour routes-presented in the tour brochure-include the visitor center at the Eastern Front and interpretive sites located on the four-mile Battlefield Tour within the Eastern Front and the 16-mile Siege Line Tour that connects sites to the Western Front and Five Forks. The sites represent nine of the 24 principal battles of the Petersburg Campaign.

Battlefield Tour

Visitors usually leave the visitor center to walk the short trail to Battery 5 along portions of the Dimmock Line, the original Confederate line for the defense of Petersburg. More adventurous visitors continue on to the site of a replica of the Dictator—an authentic Union sea-coast mortar that rained shells on the Confederate line. Visitors then return to their cars and travel through the Eastern Front on the one-way road, where segments of the Dimmock Line, Confederate and Union earthen forts and trench lines on the cores of the Initial Assault, Fort Stedman and Crater battlefields are interpreted. There are seven stops beyond the visitor center, most located at major earthen constructions.

An introductory panel and other individual site markers provide information about the military events and historic sites at each stop. Memorials and other commemorative markers have been placed in some locations

to identify battle positions or specific battle participants.

This section of the tour ends when the visitor exits on to Crater Road about one mile south of VA Route 36, across from an entrance to interstate highways I-85 and I-95.

Siege Line Tour and Five Forks

This seven-stop drive takes the visitor westward from Crater Road along the Union siege line toward the series of forts southwest of the city, and ultimately to Five Forks. The route follows the ever-expanding Union line in a chronological tour of the campaign.

Poplar Grove National Cemetery, located along the Western Front is staffed in the summer months and restrooms are available.

An alternate stop along the driving tour is Grant's Headquarters at City Point. The Petersburg brochure identifies the location of City Point, and offers a short paragraph on this site. Because City Point is approximately eight miles from the Eastern Front visitor center, many visitors are not encouraged to travel this distance, so instead they drive through the Eastern Front and then leave the area.



Education Specialist describing the Campaign by using living map.

Each interpretive stop on the Siege Line Tour is oriented to a major fortification and includes an introductory wayside and smaller interpretive signs. The sites along the route are small and surrounded by development. Most are forested and few provide visitor services, although Fort Wadsworth, Fort Conahey and Confederate Fort Gregg have been cleared and are visible to the passing visitor. Five Forks is the final stop on this tour.

Special Programs

A curriculum-based education program was established in 1998, operated by an education specialist, in an effort to provide classroom and field trip programs to local school systems. Student participation in field trip and outreach programs has dramatically increased from 1998 to 2002, with nearly 10,000 students participating in field trip and classroom programs. More local schools

requested programs than could be served. The potential audience may be between 40,000 and 60,000 students, given the level of interest and number of requests. The education specialist position has not always been filled, and even when it is filled, the level of staffing is not adequate to meet demand and size of the student groups. In addition, staff is needed to assist with a summer camp program that has provided over 250 young visitors annually, an opportunity to experience life as a Civil War soldier.

Ranger-led battlefield bus tours have been sponsored periodically by the park and local historic and tourism organizations. The tours are usually held during the summer or on spring and fall weekends and are always filled. Spaces on the three special bus tours held in 1998 were reserved well before the program date. The experience suggests that there is a substantial audience for park-run or park-assisted tour programs.

Appomattox Manor tours consist of two rooms of the manor and are furnished with Eppes family items. The manor draws visitors interested in historic houses and plantations. This is an area of interpretation and visitor interest that could be developed further.

Visitor Use

The typical visit to the park begins with an orientation at the Eastern Front visitor center and includes a tour of Battery Five and visits to Fort Stedman and the Crater. Often this visit takes several hours, after which visitors leave the park. Some visitors continue on to other sites, although there is a sharp drop-off in numbers at other sites. Civil War enthusiasts are the most likely to pursue the tour through all of the interpretive stops.

Most visitors stay at the park for two to four hours. There is a general perception that the Eastern Front is the whole Petersburg NB with less than a quarter of these visitors going on to the other units. Several factors reinforce visiting the Eastern Front solely:

- Visitors do not allow enough time for an extended visit, and need to 'continue on' after visiting the Eastern Front;
- Visitors receive little or no information about the other NPS and community sites;
- Visitors get lost along the tour route because of inadequate signage, confusion



Living History at the Eppes Plantation, City Point

due to too many types of historic signs, and/or inherent difficulty in navigating a 36-mile tour route on local roads; and

- Visitors may have a limited interest in the Civil War.

Recreational Facilities

Horseback riding is increasing in the park. Word-of-mouth promotions among riders have brought visitors from as far away as Maryland. One of the most frequent comments is "I come here because there is no other big place closer to home."

Riding is primarily restricted to the Eastern Front and to those trails that do not go through Fort Stedman and the Crater. Horses are restricted on the park tour road. Horse-trailer parking is accommodated in a parking lot at the Eastern Front.

In addition to horseback riding, joggers, hikers, and bikers enjoy using the paved and wooded recreational trails through the battlefield. These trails attract many locals who use them on a daily and weekly basis.



A picnic area has been created between Stops 3 and 4 on the tour route. The site comprises a parking lot and a dozen picnic tables. Visitors informally picnic at many different spots in the Eastern Front and at Grant's Headquarters at City Point.

Limited access for fishing along the James River is provided at Grant's Headquarters at City Point.

Fort Lee Cooperation

Fort Lee Military Base and Petersburg National Battlefield have enjoyed a cooperative relationship for many years. The base and the park have formed many partnership agreements to facilitate a variety of activities from sports and recreation to resource management. Cooperative agreements include the following:

- A Memorandum of Understanding (MOU) to provide Fire and EMS support to the Eastern Front.
- Fort Lee allows the park to use their downlink station for Technology Enhanced Learning courses.
- Mutual assistance between Fort Lee's Environmental Staff and the park's Resource Management Division and the base's Information Technology Division and Resource Management.
- Fort Lee Intramural Sports provides sport facilities for park events and activities while the park assists them with an annual Armed Forces Day Run held in the park.
- Fort Lee Safety Office assists the park with expertise, publications and video use.
- An agreement is in place to allow military personnel to use the park during the early morning hours for physical training.
- One of the base's water storage facilities lies on park grounds while the park's visitor center/maintenance facilities water feeds off of Fort Lee's water lines. Agreements and permits are in place to cover these various uses.
- The park is currently working on an agreement to rent part of the base's curatorial storage facility to house park collections.